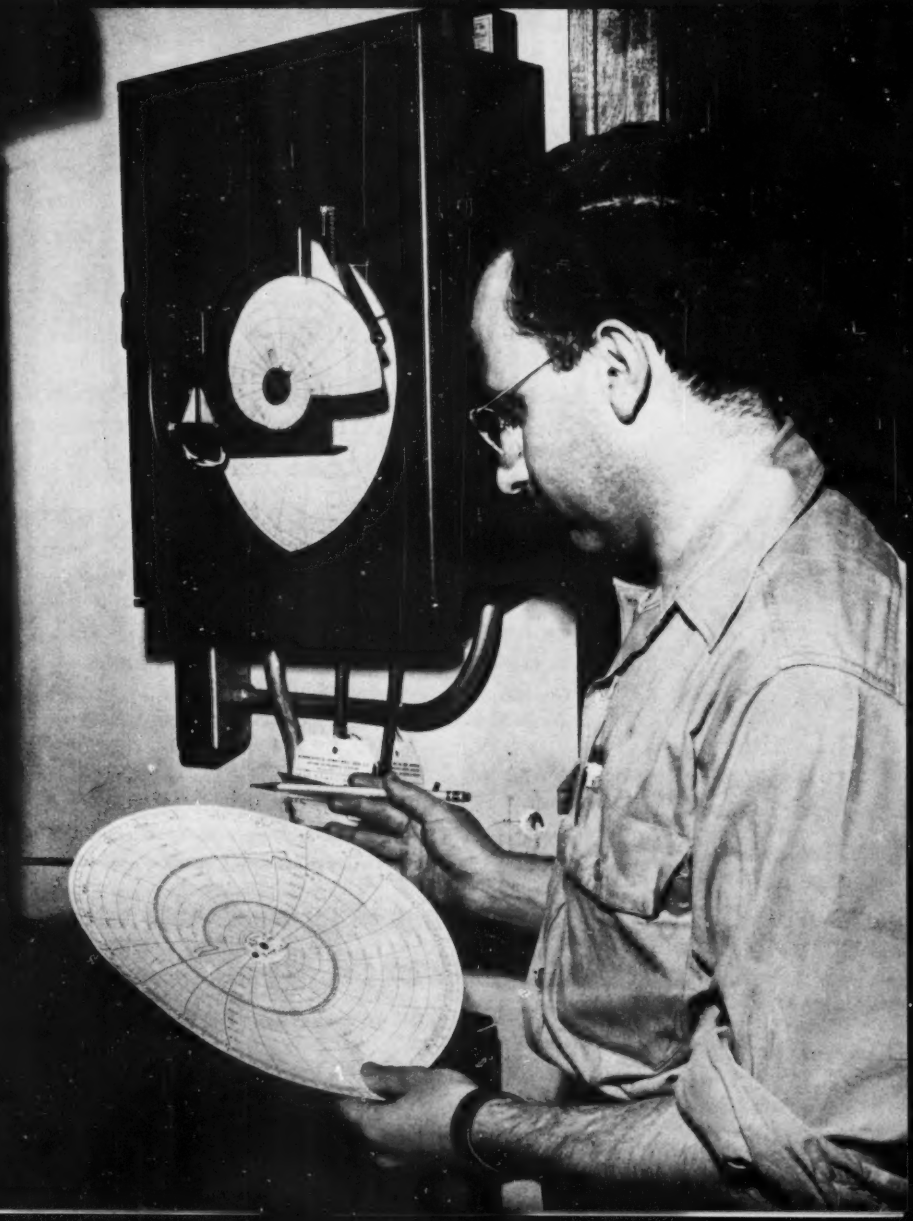
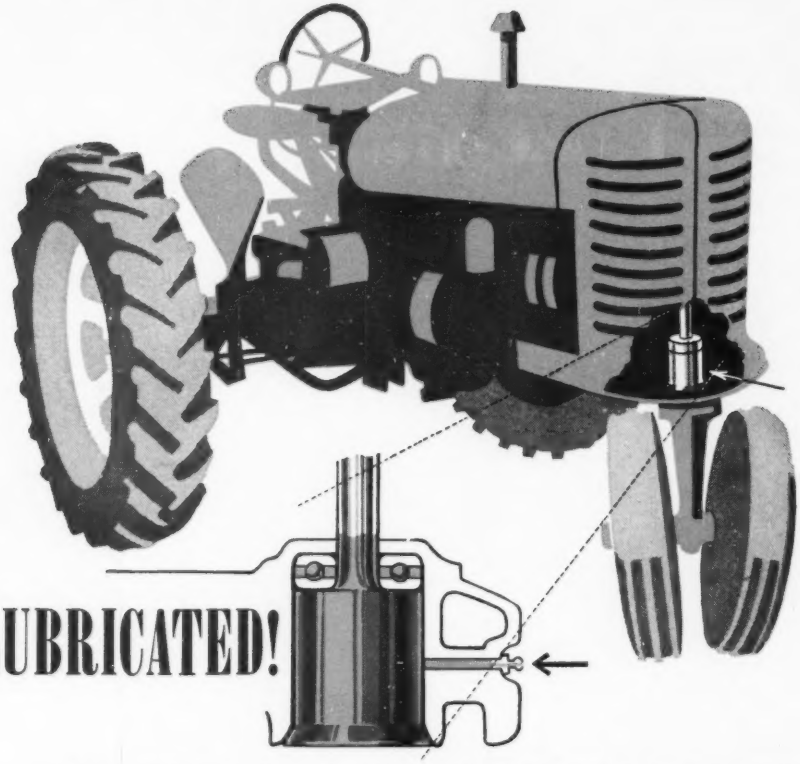
The Spokesman



OFFICIAL PUBLICATION

NATIONAL LUBRICATING GREASE INST. NLGI



WELL-LUBRICATED!

the end result of using Mallinckrodt Stearates

As agriculture becomes more mechanized the farmer demands greases that will serve *his needs*... especially a grease that withstands all types of weather... a clean, wear-resistant grease that is an "A-1" lubricant.

That's the kind of grease made from Mallinckrodt Aluminum Stearates.

Our stearates serve you, the grease manufacturer, too. Production costs are cut by MAXIMUM YIELDS... UNIFORMITY... HIGH DROPPING POINTS ... CLARITY... and RESISTANCE to BLEEDING and MECHANICAL BREAKDOWN. Whether it's general purpose or high efficiency aluminum soaps you want... select from Mallinckrodt.

When you have grease-making problems write Mallinckrodt. Our research staff with 29 years of stearate experience is ready to serve you.

Mallinckrodt®

MALLINCKRODT GREASE-MAKING ALUMINUM STEARATES:

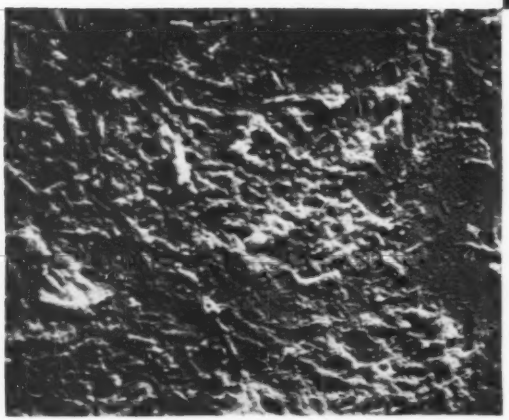
D D-49 D-50 D-51

MALLINCKRODT CHEMICAL WORKS

Mallinckrodt St., St. Louis 7, Mo. • 72 Gold St., New York 8, N. Y.

CHICAGO • CINCINNATI • CLEVELAND • LOS ANGELES • MONTREAL • PHILADELPHIA • SAN FRANCISCO
Manufacturers of Medicinal, Photographic, Analytical and Industrial Fine Chemicals

Purity and Uniformity of
CYANAMID'S
ALUMINUM STEARATES



Mean Superior Structure
in your
GREASE FORMULATIONS

Rigid testing and quality control, thorough structure studies with the latest equipment . . . all help to give Cyanamid's Aluminum Stearates the following advantages for superior lubricating grease formulations:

. . . Superior gelling . . . Excellent stability . . . High resistance to mechanical breakdown

Available in three grades:

Cyanamid Aluminum Stearate G-100
Gives maximum gelling . . . developed for continuous grease-making equipment.

Cyanamid Aluminum Stearate G-200
Higher gelling properties in hydrocarbon oils than a conventional di-stearate . . . gives smooth gel of moderate consistency.

Cyanamid Aluminum Stearate G-300
Gives high yield and excellent stability in a variety of oils . . . for use in conventional grease-making equipment.

write for booklet:
CYANAMID ALUMINUM STEARATES FOR LUBRICATING GREASES

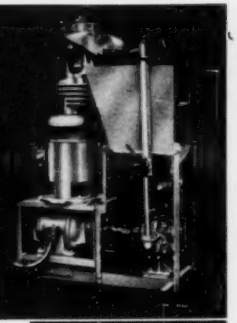
AMERICAN Cyanamid COMPANY
INDUSTRIAL CHEMICALS DIVISION
30 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.

In Canada: North American Cyanamid Limited, Toronto and Montreal

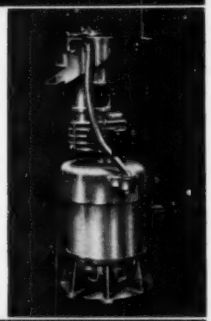
Whatever your problem

GRINDING
HOMOGENIZING
EMULSIFYING
DISINTEGRATING
DISPERSING
BLENDING

(Corrosive and Non-Corrosive Products)



YOU CAN GET A MOREHOUSE® GREASE MILL TO MEET YOUR NEEDS

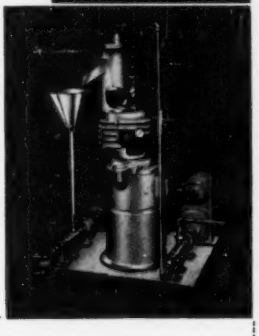


You will find the mills illustrated on this page typical of a wide range of Morehouse Speedline equipment used in processing over 100 different products for industry in more than 30 countries.

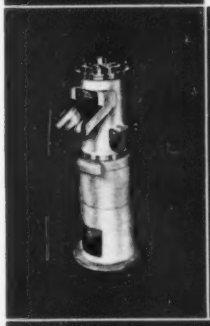
For your use in processing grease, we recommend mills numbered 1, 2 and 6. Mills and deaerating equipment are available separately or in combination. Mill No. 6, for example, is our Model B-2005 with deaerator. This equipment measures only 5' x 3' 4" at the base, 7' 10½" in overall height, yet it has processed (milling and deaerating) as much as 25,000 pounds per hour. Deaerating rates as high as 1000 pounds per minute have been observed!

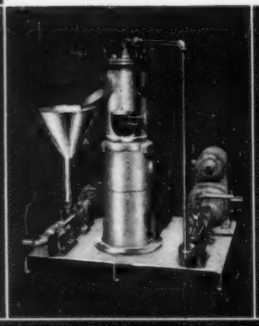
As a direct result of the Morehouse principle of high-speed milling and deaerating, you get products of improved appearance and texture. Products are not contaminated during the milling process. In fact, many are upgraded. Also, a drum will hold more grease, by weight, if the product to be packed has been deaerated . . . with more efficient use of drum container and storage space. These factors mean better selling prices and better profits on your products.

Each mill in the Morehouse line is unusually compact, lightweight, easy to maintain, low in first cost, completely proved in the field, fully guaranteed . . . and gives you as much as four times the volume production of ordinary mills!



Write for complete information TODAY!





MOREHOUSE INDUSTRIES, Dept. "G"
1156 San Fernando Road
Los Angeles, California, U.S.A

Please send me complete information on Morehouse Speedline equipment. I manufacture _____

Name _____

Company Name _____

Address _____

City _____

Country _____

Published monthly by
The National Lubricating Grease Institute
Harry F. Bennetts, *Editor*
Joanne Couey, *Assistant Editor*
4638 J. C. Nichols Parkway
Kansas City 2, Mo.

1 Year Subscription.....$2.50
1 Year Subscription (Foreign).....$3.25

The INSTITUTE Spokesman

Volume XVI Number 6 September 1952

IN THIS ISSUE

ABOUT THE COVER

The rate of cooling employed in the manufacture of aluminum base greases, in particu'ar, as well as lithium greases, has a marked effect on the characteristics of the finished grease. This month's cover picture illustrates one of the development studies carried out by Witco Chemical Company's technical staff to accurately measure the effect of this variable in the production of high quality greases.

The equipment used consists of an electrically heated oven combined with a cooling rate controller-recorder. By the use of a suitable cam in the controller, coo'ing can be accomplished at a predetermined rate with a minimum of attention and maximum reliability, under conditions that can readily be reproduced and with the additional advantage of a permanent record.

The large mechanical-convection type laboratory oven permits simultaneous cooling of a number of greases under identical conditions so that performance comparisons between different experimental and commercial soaps can be made. In a future publication Witco will present typical data obtained in this study. While it is realized that experimental work with greases on a laboratory basis is not always duplicated on a plant scale, it is the necessary first step in the development of new products, as well as the means for improving existing products and for the study of plant operating conditions.

The improved aluminum and lithium products developed by Witco in the last few years attest to the soundness of this approach. Thus a variety of aluminum soaps are now available from which a selection can be made to yield the best possible greases with the facilities and oil stocks available at different plants. With the current emphasis on lithium base multi-purpose products very definite contributions have been made with respect to economy, temperature of incorporation, and stability of preformed soaps.

Witco Chemical Company has further found this arrangement to be a valuable tool for control testing its production of grease grade metallic soaps, thus assuring uniformity of shipments.

This study is only one of many being made in Witco's Technical Service Laboratory with the aim of providing the grease industry with metallic soaps assuring the manufacture of top quality products.

President's page

by George E. Merkle, President, N.L.G.I.

WHAT HAPPENED TO OUR FREEDOM?

It was a desire for certain freedoms that prompted the early United States settlers to seek a new place to live. Naturally freedom was uppermost in their minds when writing the Constitution and the laws of our land. For many years we could point with pride to our way of life as compared with that of many other countries.

Our policy proved a good one as our nation progressed at a rapid rate and became the most potent power in the world. There were no restrictions on incentives. We believed in free enterprise.

As time passed certain abuses developed and required corrective measures. One prominent issue was that of slavery which has long since been corrected. Another abuse was that of monopoly which has also been since corrected.

With the general feeling against slavery and monopolies, one would think that they would never be tolerated in our country again.

The sad fact is that we are tolerating a form of slavery and monopoly without any effort being made to stop or correct them.

It's no secret that large groups are forced to abide by the dictates of a very few. Often one person or at most a very few persons decide whether willing workers will work at available jobs or not. When a person or group of persons can control and dictate to other persons as to what they may do, where they may work, and when they may work, a condition of slavery exists. When they prevent others from performing the duties they want to control a state of monopoly exists.

One controlling the supply of any commodity or service to the extent that he can control prices is considered to have a monopoly. This definition aptly fits the abuses from which our public has suffered for the past several years. This has been largely due to the hunger for votes of many politicians. There are signs of public resentment developing against these conditions. Before any worthwhile improvement is made, the politicians will have to be impressed by the public that there is a strong feeling for action on corrective measures. This would change their thinking as to what group they should cater to for votes.

It is not an easy task but a worthwhile one for the worker, for industry, for the public in general. Let us strive to regain our freedom.

IMPORTANCE OF LUBRICATION TO INDUSTRY MANAGEMENT

LUBRICATION is complex, like modern industry that it serves. Lubrication is effective in keeping output up and operating cost down only when machines properly designed for lubrication are supplied the proper lubricants.

To cover the subject adequately, this article cannot be limited to lubricants, but must be broadened to include lubrication engineering. By my definition, lubrication engineering is the art and science by which lubricants are most effectively used to minimize friction and prolong the life of machines. The industrial age in which we are now living is dependent on our highly mechanized production machinery. It is not generally realized that friction has been one of the greatest physical obstacles encountered by engineers in the development of these machines.

A large part of the $8000 in plant investment used by the average American factory worker is in tools and machines. The wealth of our nation is not measured by this investment, nor the gold interred at Fort Knox. Our true wealth is in the useful products which are created by our immense industrial system. The American freedom of initiative has made it possible for industry to produce not only the necessities of life, but a vast volume of luxuries which, in our time, have come to be accepted as necessities. Our nation each year is producing goods worth more than 170 billion dollars and spends another ten billion in transporting them quickly to the consumer. Little of this could be accomplished without the modern lubricants that limit heat, wear, and corrosion where metals are in motion.

Less than a century has passed since the first petroleum lubricants were offered for use in transport and industry. These lubricants and those compounded with animal fats and vegetable oils have made possible much of our industrial progress. In recent years, improved refining methods, synthetics, and additives have supplemented and fortified the abundant and relatively inexpensive petroleum oils. The increasing pace of American industrial progress and output could not be sustained without lubrication and the unrestricted initiative in lubrication research.

Knowledge of lubrication has increased enormously in recent years. The pocket watch and the steam engine posed early problems in special lubrication requirements. Today, the range in the manufacture of a single product, such as a

THE LUBRICATION ENGINEER encounters a variety of lubrication problems in the manufacture of a single product, such as nylon, where the range extends from enormous compressors to tiny spindles such as these, rotating at tremendous speeds.

Mr. Hollingsworth presented this paper before the American Petroleum Institute Lubrication Committee Meeting, May 27, 1952, at Tulsa, Oklahoma.

D. F. HOLLINGSWORTH
ENGINEERING DEPARTMENT
E. I. DU PONT DE NEMOURS & COMPANY, INC
WILMINGTON, DELAWARE

synthetic fiber, extends from enormous compressors operating at high pressures to tiny spindles rotating at tremendous speeds, each introducing vastly different problems for the lubrication engineer.

For example, take a look at the lubrication problem in the Du Pont Company. It makes more than 5000 products, ranging from petroleum additives to synthetic fibers; from acids to explosives; from paints to anti-freeze; from plastics to fine perfume; and hundreds of others. The equipment necessary to make these products includes almost every type of process apparatus. We must operate all kinds of rolling stock; delicate precision tools; heavily loaded crushers; construction machinery; automotive, diesel, and gas engines; and the many special machines required in the chemical industry. This equipment must operate under a wide range of physical and chemical conditions.

A momentary failure may cause hours of lost production. Not so long ago it did not make too much difference. Machines operated at slow speeds and continuity was not too important. We could make up production losses by running a few extra hours. Now, things are different. Machines are designed to run with minimum downtime, and when we lose production we seldom can make it up. We depend on modern lubricants and lubrication engineers to keep our machines running.

Some time ago, I read that a business analyst was using the sales of lubricating oil to measure business conditions. He said, "Everything that moves calls for lubrication, everything from an egg beater to a diesel engine. When demand for lubricating oil drops, it means less activity and, by the same token, an increase in demand indicated wheels are turning faster and longer". Last year it required more than two billion gallons of lubricating oil to care for our national needs. This included transportation, construction, public utilities, agriculture, and industrial manufacturing. Knowing that it costs from one to three dollars to apply a dollar's worth of lubricant, the annual cost of lubricants and their application in American industry is estimated to be five billion dollars. The cost for equipment failures resulting from the absence of lubrication may far exceed this amount. Adding the loss due to improper lubrication procedures and practices used in our nation's industry, the resultant total cost would be incomprehensible. It is doubtful that many of the managers of the more than three million individual

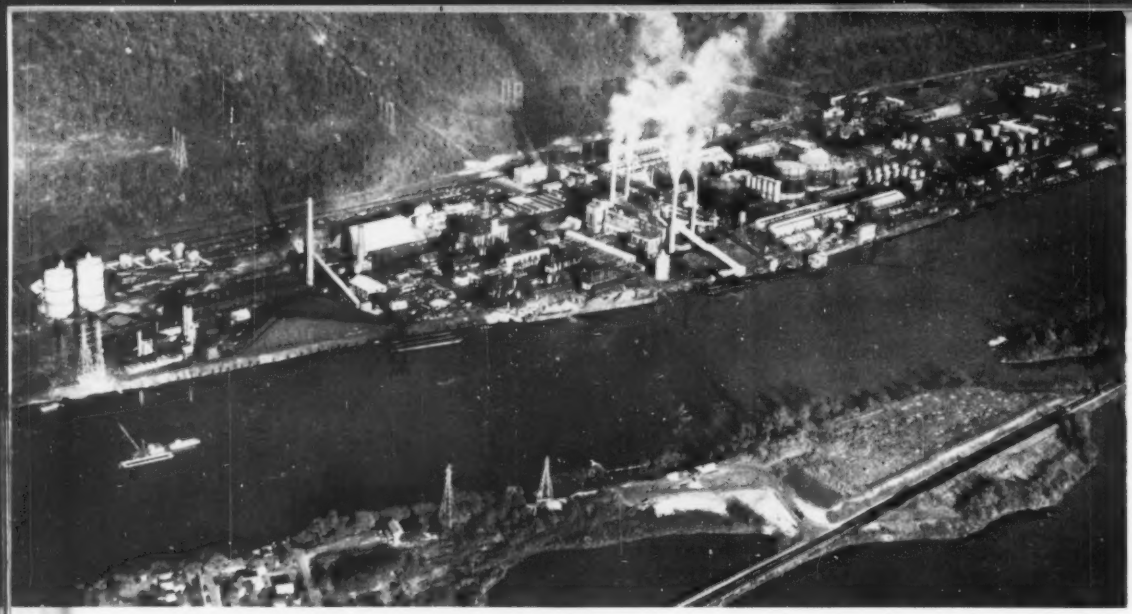
LUBRICATION IS COMPLEX, like this modern Du Pont plant at Orange, Texas, where high pressure synthesis of petroleum gas produces methanol for antifreeze and essential raw materials for the manufacture of industrial chemicals.

business firms of all sizes in the United States realize what they are paying per year for lubrication. In the Du Pont Company, we know the total cost for lubrication exceeded three million dollars last year, and we also know that an expenditure of this magnitude requires control.

The progressive manufacturer, irrespective of the size of his business, realizes that to produce the goods he must spend money on lubrication. He is vitally interested in lubrication because of several important factors that affect return on investment. Such factors as plant investment, production, quality, inventories, sales, and safety are all influenced by the character of lubrication engineering practiced in his plants.

Consider investment—every industry is interested in keeping its plant investment down and its sales up to maintain at satisfactory return. Perhaps management does not always appreciate the degree to which good machine design requires a knowledge of lubrication engineering if the machine is to satisfy the requirement of minimum investment and maximum output.

To illustrate this point, several of our plants have two successive operations carried out in two separate machines. These machines represent an appreciable part of the plant



DU PONT DEPENDS ON LUBRICATION ENGINEERS and modern lubricants to keep machines running in this chemical plant at Belle, West Virginia. It is one of seventy-one plants scattered throughout the country from Maine to California.

investment. It was decided to combine the two operations into a single machine. This would reduce product handling between machines and save floor space. One of the original machines required monthly shutdowns for manual lubrication, while the other was lubricated on an annual preventive maintenance shutdown schedule.

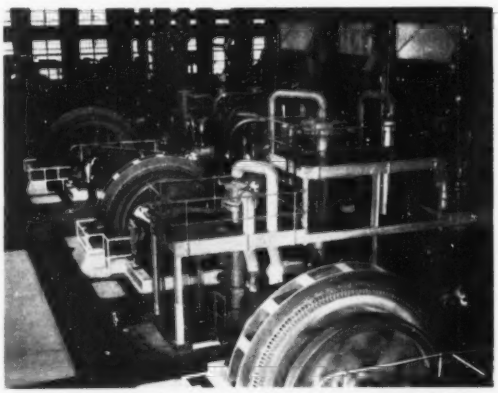
In the design of a machine to consolidate these two operations, a study was conducted by the lubrication engineers in cooperation with others. The results of this study indicated that improved bearings and mechanical lubricators would contribute materially to the success of the proposed design. The design of machine elements provided for use of the newest type inhibited oils and greases for the increased speeds and higher temperatures to be encountered.

The installation of the consolidated machines in new plants has brought a three-fold advantage: first, continuity of operation was improved; second, elimination of product handling reduced operating cost; third, the decreased cost of the machines and size of building to house them reduced plant investment substantially.

We find that careful planning and scheduling of lubrication increases production by avoiding machine breakdowns. It also reduces lubrication cost at least 10 to 15 per cent. For example, in one of our plants there are 2750 machines, including pumps, dryers, ball mills, kilns, and many other pieces of chemical process equipment. Lubricating them required more than 1,500,000 inspections a year. After lubrication scheduling was inaugurated, the number of inspections was cut to about 1,200,000—a drop of about 20 per cent. Savings of several thousand dollars in application cost resulted; but of even greater importance, the number of equipment failures was curtailed. In one of our machine shops, several thousand dollars were saved through proper scheduling. The year before scheduling was installed, more than 200 repair orders were issued due to lubrication failures. In the year after the scheduling of improved lubricants was inaugurated, there was not one failure due to lubrication.

When attempting improvements, we sometimes run head on into trouble. Some years ago we attempted to make use of the anti-foaming characteristics of a new oil in some vital compressors in a sulfuric acid plant. The particular anti-foam agent used poisoned the catalyst and caused a shutdown of the plant. The system had to be purged and the catalyst reactivated at a cost of several thousand dollars.

Increased production sometimes stems from unexpected



THE DEVELOPMENT AND USE of suitable lubricant additives eliminated valve fouling in these high pressure compressors used in making ammonia.

METASAP ALUMINUM STEARATES*

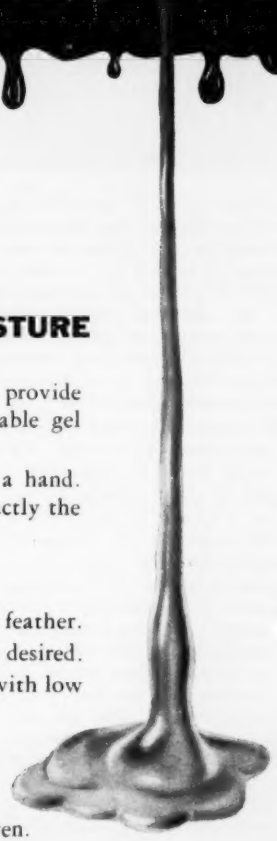
MAKE BETTER GREASES

Metasap Stearates Provide your Lubricant with these properties

- ★ **STABILITY**
- ★ **UNIFORMITY**
- ★ **CLARITY**
- ★ **WATER REPELLENCY**
- ★ **FREEDOM FROM MOISTURE**

For firmer, less granular greases Metasap Metallic Soaps provide just what you are looking for. In addition their remarkable gel efficiency delivers appreciably greater yields.

Whatever your grease requirements, let Metasap lend a hand. We can help you select the stearate that will produce exactly the result you wish. Won't you write us?



METASAP ALUMINUM STEARATES INCLUDE:

Metasap 537—designed to give No. 3 consistency and a short feather.

Metavis* 543—designed to produce any degree of stringiness desired.

Metasap 587—for producing soft, smooth and stable greases with low viscosity oils.

Metavis 540—for producing low viscosity greases for agricultural and industrial machinery.

Metasap Aluminum Stearate R, Aluminum Stearate GM, 537, 590, and 598—for producing harder greases, in the order given.

*REG. U. S. PAT. OFF.

METASAP CHEMICAL COMPANY

REG. U.S. PAT. OFF.

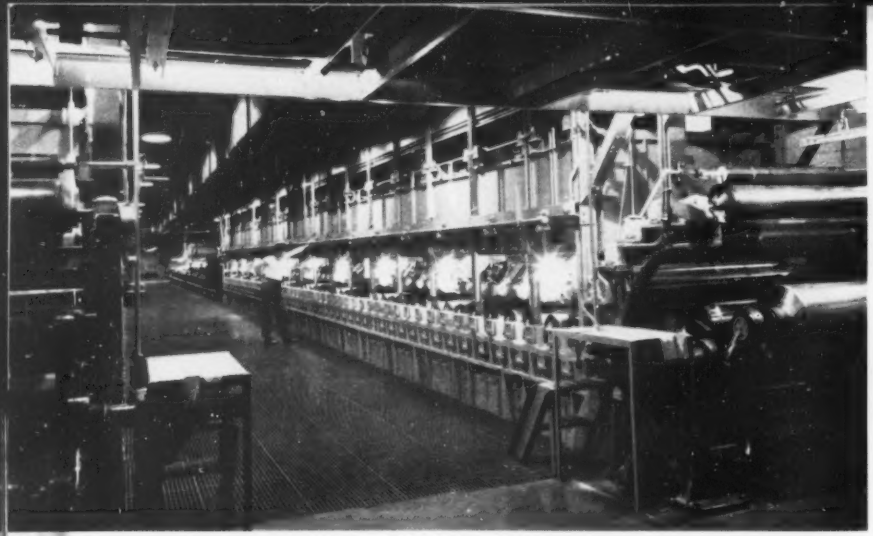
METASAP CHEMICAL COMPANY, HARRISON, N. J.

BRANCHES: BOSTON • CHICAGO • CEDARTOWN, GA. • RICHMOND, CALIF.

Stocks at Cleveland and Akron, Ohio; Los Angeles and San Francisco, Calif.; Louisville, Kentucky

Stearates

of Calcium • Aluminum • Lead • Magnesium • Zinc



THE USE OF SPECIAL strontium base greases in the bearings of this cellophane casting machine contributed to a reduction in overall lubrication costs.

circumstances. In the production of tetraethyl lead, castor oil had been used for many years in the lubrication of certain equipment bearings. There was some basis for belief that a petroleum oil could not be tolerated. But, with the outbreak of World War II, the government placed castor oil on allocation. This started out lubrication engineers and process men on a new study of the problem. The effort was quite successful and much to everyone's surprise, not only was quality unaffected but yield was increased and maintenance cost reduced several thousand dollars.

The lubrication engineer needs to be up-to-the-minute on new developments in his field. There is always something new which makes the "impossible" of a year ago into the "routine" of today. This was the case with the development and use of suitable lubricant additives which eliminated high-pressure compressor valve fouling, which for many years was accepted as inevitable.

Quality of product is very important in all industries, and those who are in marketing are well aware of the trouble an off-quality item can cause. The wrong lubricant in the wrong place in the chemical industry can affect quality as well as the many other factors. The lubrication engineer must be concerned with quality of product as well as with production volume. This does not mean that he should simply see that the machines continue to function smoothly, but he must see to it that the lubricants do not adversely affect the products from the machines. A chemical reaction can be affected by an insignificant amount of lubricant in the wrong place, and products can be stained or discolored or otherwise damaged.

An example which comes to mind from my experience concerns our cellophane casting machines. During the development of the casting machines from the original French design to the present-day machine, which operates at much higher speeds, special friction-driven rolls were introduced. In recent years, the speed of these rolls has increased 20 per cent. Through heating of the rolls, the bearings are exposed to high temperatures in the presence of steam and condensate. These unfavorable conditions for bearing operation resulted in sticking of the rolls, which caused a quality problem and high maintenance due to frequent replacement. The need for excess lubricant in these bearings to maintain operation caused product contamination and fire hazards in the equipment, as well as lubricant in the condensate return which caused difficulty in the power house. A special strontium base grease was submitted by one of the oil companies for test. Its use reduced the number of applications by 80 per cent, and the consumption of lubricant by 98 per cent.

In the procurement of lubricants, the engineer and purchasing agent must cooperate to control inventories. We are all aware of the effect of excess inventory in any business. Lubricants are no exception.

Frequently, equipment manufacturers recommend brand-name lubricants for their equipment. This is usually done in good faith to insure the purchaser of adequate lubrication and give him something that is sure to work. In practically all of these cases, any number of lubricants will provide satisfactory performance. Likely, such a lubricant is already in the stockroom, if there were someone available to determine which product meets the need. Lack of inventory control usually results in large inventories with stocks on hand sufficient to lubricate some equipment for years and other parts for only days.

A few years ago, a large plant about to go into operation was found to have on hand 900 drums and 80 different varieties of lubricants. Included were a dozen barrels of elevator guide rail grease—enough to run the two elevators in the plant for years! A lubrication engineer subsequently specified a dozen types which would meet all needs. He cut the inventory to one-sixth its original size.

It is not unusual for increasing sales of a manufactured product to place an unexpected burden on production machinery. One of the dryers used in the manufacture of neoprene employs anti-friction bearings, oil-lubricated, and operating in an ambient temperature of 120° C. For years it had been necessary to shut down the dryer every two weeks for an eight-hour period to inspect the bearings, since rapid oil oxidation contributed to premature bearing failure. When sales required additional production, it was estimated that

100,000 pounds of additional product could be provided through a decrease of 90 per cent in downtime. Tests now under way indicate that the bearings, lubricated with a new type grease, can be operated for a full year without shutdowns for bearing inspection.

Another case involved a plant where we tried to increase the speed of certain machines about 20 per cent to get more output to satisfy sales demands. Trouble in the form of rapid failure of oil-immersed gears was prematurely diagnosed as a lubrication problem. A comprehensive analysis by our lubrication engineers traced the cause to "hunting" of the drive motors, and this, in turn, to the turbine governor in the power house. Changes in the governor stopped the rapid failure of gears and allowed the machine to run at higher speed without excessive maintenance costs. Being able to run the machines at the higher speed avoided the need for a large capital investment to meet the sales demands. In addition, the increased production was gained months sooner than by building new production facilities.

One of the worst things about poor lubrication is the accident hazards it creates in the plant. Equipment which is not properly maintained is unsafe. Good lubrication can do much to eliminate unsafe working conditions and at the same time effect operating savings. In one case, open bevel gears were throwing lubricant onto the floor, causing slippery footing for the operators. Development of a new and more adhesive lubricant solved the problem, eliminated the safety hazard, and also effected substantial annual savings.

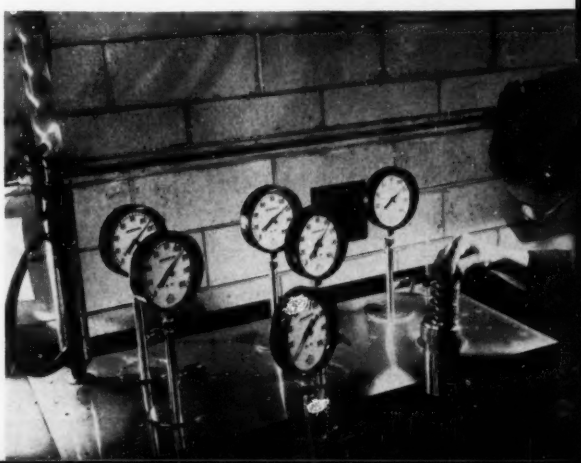
From these illustrations, we can appreciate the influence that good lubrication engineering can have on decreasing plant investment, increasing production, improving quality of product, controlling inventories, assisting sales, and improving safety. The examples given have resulted in very substantial benefits. Many phases of engineering and technical advancements by the lubricant manufacturers and our own technical forces have contributed to these achievements. The use of better lubricants, new ways of application, re-design of machines for proper lubricant application, planning and scheduling, standardization, judicious purchasing, proper handling and storage, training of personnel, and many other factors all go to complete a balanced approach to the lubrication problems of industry. You will quickly recognize the benefits that good technical service from the lubricant supplier can have on the customer's program.

In the Du Pont Company, where 71 plants in 25 states are served by a central engineering organization, the lubrication engineering group is in that department. The lubrication engineers act as coordinators within the company and as liaison between the supplier and our plant organizations. Through cooperation with plant lubrication personnel and the central purchasing department, a code system has been employed to assist in company-wide lubricant standardization and for ease of personnel training. Du Pont maintenance and production personnel are often transferred from one plant to another. With our system, when an employee is transferred from "Natchez to Mobile, or Memphis to St. Joe, or wherever the four winds blow", he is not required to learn the names and uses of new lubricants.

In the development of our lubrication program and procedures, we rely heavily on technical service from the oil industry. Without it, our progress would have been seriously impaired, if not impossible. Industry is hungry for technical lubrication information as evidenced by the formation of the American Society of Lubrication Engineers a few years ago. It had been difficult for lubrication engineers to keep abreast of the latest techniques and methods because of the dearth of reliable technical information. Information from some sources included exaggerated and questionable testimonials without supporting technical data. The oil industry, through its technical service groups, staffed with good specialist engineers, has succeeded in overcoming much of the adverse effect of this propaganda.

The exacting operating conditions which exist in today's production equipment, and the conditions which are expected in the future, are a challenge to all of us. We know that improved lubricants will be needed. We know that certain synthetics, additives, stabilizers, and improved soaps have greatly contributed to better lubricants in recent years. We can't afford to place ourselves in the position of the player piano manufacturer of a few years ago. Time was that the player piano was an important and profitable product. In 1916 alone, Americans bought 200,000 of them—far more than they bought of the hand-operated variety. Well, they're gone now—and the manufacturers of radios and television sets have the business the player piano once had. Competition is like that; you can't tell when an old product will be out and a new one in.

It doesn't matter whether we are buying a product or selling it, we must be prepared to meet unexpected obsolescence. The oil industry plows back large sums in research to make improved lubricants. Lubrication engineers from the consuming industry and the oil companies must team up to show American management how good lubrication engineering can reduce their production costs. In addition, they must exchange information on technical requirements and new developments so that the machines which industry needs can be built and operated to produce the goods which modern living demands.



EXPERIMENTAL COMPOUNDS are tested for antioxidant properties at Du Pont Petroleum Laboratory where research work is carried on in the development of grease stabilizers and other additives for petroleum products.

GREASE

MANUFACTURERS

for
RESISTANCE TO OXIDATION
CONTROLLED END PRODUCT
LIGHT COLOR
UNIFORMITY

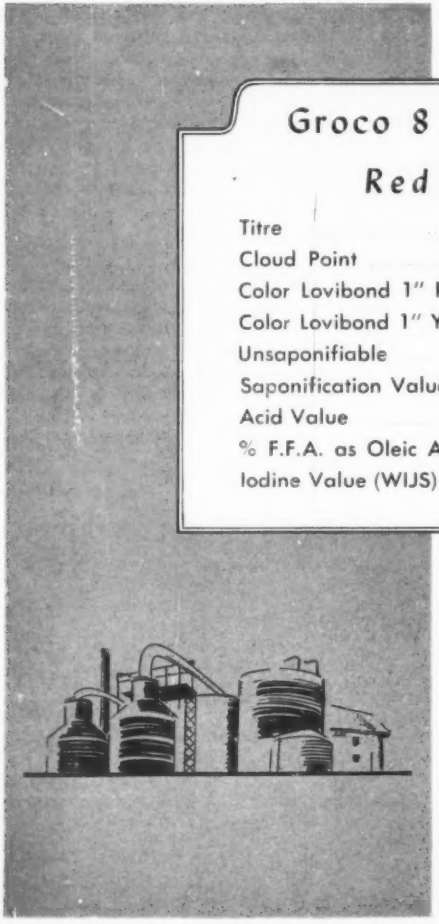
INSIST ON A. GROSS & Company Fatty Acids*

Write for our free booklet "Fatty Acids in Modern Industry"

Groco 8

Red Oil (Oleic Acid)

Titre	8°	-	10°C.
Cloud Point	46°	-	49°F.
Color Lovibond 1" Red	4	-	8
Color Lovibond 1" Yellow	20	-	40
Unsaponifiable	2.0% max.		
Saponification Value	196	-	199
Acid Value	195	-	198
% F.F.A. as Oleic Acid	98	-	99.5
Iodine Value (WIJS)	88	-	92



A. GROSS & COMPANY

295 Madison Avenue New York 17, N. Y.

FACTORY: NEWARK, N. J.

Manufacturers since 1837

*Distributors in Principal Cities

Now—One grease will service all grease applications in the majority of plants

Gives ALL THESE PLANT SAVINGS:

1. **Extends TIME between greasings**—lasts longer . . . stays in bearings longer.
2. **Low-cost application**—fewer servicings and *only the one grease* to handle.
3. **Simple inventory**—Shell Alvania Grease replaces up to 20 brands formerly required.
4. **Better protection**—against heat, cold and moisture.
5. **Greater safety**—less chance of applying the wrong grease!

Gives ALL THESE LUBRICATION ADVANTAGES:

1. **Higher mechanical stability** than any conventional grease at operating temperatures.
2. **Pumpable at low temperatures**—even in unheated storage.
3. **Stable at high temperatures**—superior to the best "soda" greases.
4. **Impervious to water**—excellent resistance to washing out.
5. **Longer service life**—reduced consumption.

The "MILLION-STROKE" Industrial Grease!

A grease that will stand 100,000 punishing strokes of the ASTM Work Tester has been considered a superior lubricant.

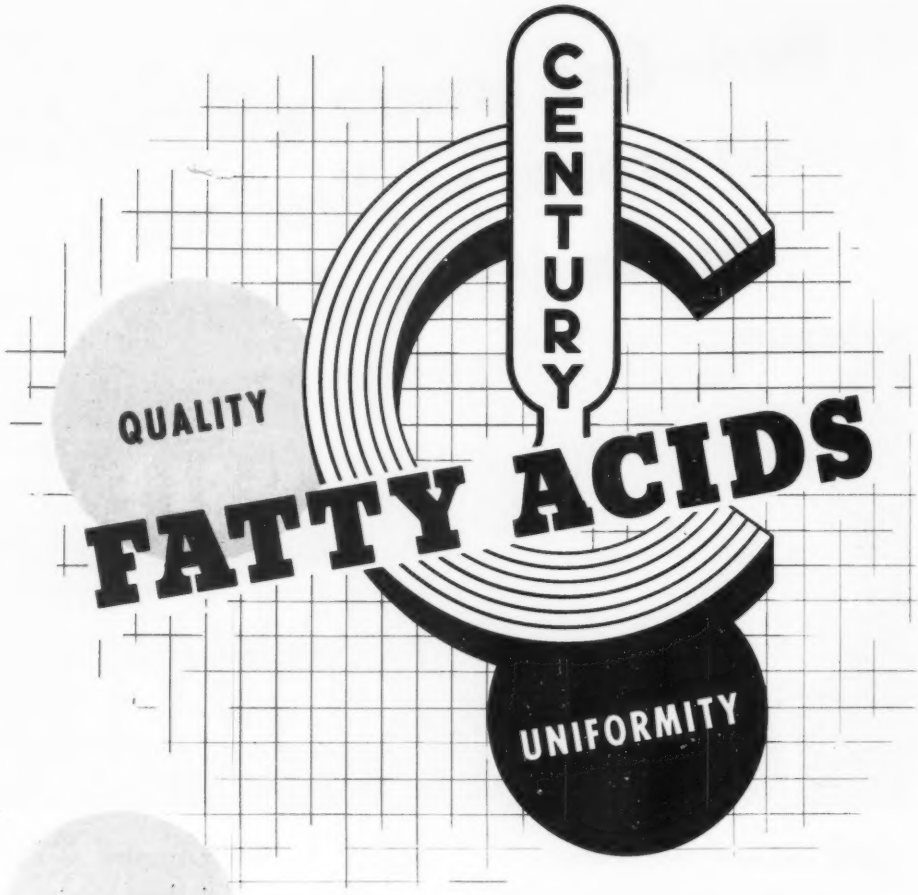
In a deliberate attempt to break down Shell Alvania Grease, *on the same tester* the run was extended...200,000 strokes...300,000 strokes . . . 500,000 strokes! Finally, at one million strokes the test was discontinued, because this grease *would not break down*—it was still a fit lubricant both in appearance and consistency.

SHELL OIL COMPANY

50 West 50 Street, New York 20, N. Y. • 100 Bush Street, San Francisco 6, California

SHELL®

SHELL ALVANIA . . . *The "MILLION STROKE" Grease*



CENTURY HYDROGENATED FATTY ACIDS

A complete range of hydrogenated fatty acids — both animal and fish — to fit the needs of the grease maker. Whatever your requirements are as to iodine value, color, or titer, there's a Century Hydrogenated Fatty Acid particularly suitable for your process.

CENTURY STEARIC ACID

There's a grade of Century Stearic to meet your precise requirements for metallic soaps as well as lubricating greases. Triple pressed where superior color and stability are needed; double or single pressed where economy plus efficiency is necessary.

CENTURY OLEIC ACID

From regular red oil to low-titer white Oleic Acid—for greases, additives, rust preventatives, etc., there's a Century Oleic Acid to meet your needs **exactly**. Century Oleic Acids are the standard of the industry because of their high quality and uniformity.

OTHER
CENTURY
PRODUCTS

ANIMAL and VEGETABLE FATTY ACIDS

•

GLYCERINE

•

STEARINE PITCH

W. C. HARDESTY CO., INC.

Century Stearic Acid Products, Inc.

41 EAST 42nd STREET, NEW YORK 17, N. Y.

Plant: DOVER, OHIO

IN CANADA: W. C. HARDESTY CO. OF CANADA LTD., TORONTO

The Technical Committee

Chairman T. G. Roehner, Director of the Technical Service Department, Socony-Vacuum Laboratories

Last month's Technical Committee article was written by Mr. H. L. Hemmingway, The Pure Oil Company, rather than by Mr. T. G. Roehner, as indicated in the August Spokesman.

There have been some additions and changes in the Subcommittees of the NLGI Technical Committee. Mr. H. C. Meyer, Jr., of Foote Mineral Company, is the chairman of the Subcommittee on Preparation of Movie on Lubricating Greases; Professor Walter J. Ewbank, representing Cato Oil and Grease Company, is chairman of the Subcommittee on Manual of Test Methods and Definitions of Terms Peculiar to the Lubricating Grease Industry, and Mr. H. C. Zweifel, of Richfield Oil Corporation, has replaced Mr. Hugh L. Hemmingway as chairman of the Subcommittee on NLGI Classification of Lubricating Greases.

It will be recalled that the first two Subcommittees are actually study groups. They have been requested to prepare reports for presentation at the Annual Meeting in October, concerning the advisability of setting up projects to prepare the subject manual and movie, respectively. All members who indicated in the recent survey that they were interested in serving on those two Subcommittees have been approached. In the case of the Subcommittee on Manual of Test Methods and Definitions of Terms Peculiar to the Lubricating Grease Industry, there were 16 volunteers, while eight signed up for the Subcommittee on Preparation of Movie on Lubricating Greases. Members for the reorganized Subcommittee on NLGI Classification of Lubricating Greases will be drawn from the membership of the previous group who served under Mr. Hemmingway and some 14 members who checked that Subcommittee on the recent survey.

The survey referred to above is that conducted within the Technical Committee to determine which members would be interested in serving on the current Subcommittees. Another objective was to ascertain whether any new projects should be established. Replies were received from over 65 per cent of the Active Members. The number of offers to serve on the various Subcommittees totaled more than 100. These offers involved 65 individuals of whom 41 are not already serving on current Subcommittees. No new projects were offered and, therefore, it is concluded that the present program of the NLGI Technical Committee is adequate.

The Planning Committee for the Annual Meeting in October has decided to add a symposium to the usual items on the program. Presentation of reports of the Subcommittees will be so summarized that they will require only half of the previous amount of time. The title of the symposium at the date of writing this column has not been formally established, but it is probable that it will be something like Utilization of Fatty Acids for the Manufacture of Lubricating Greases.

(Continued on Page 23)

SUPPLIERS OF MATERIALS FOR MANUFACTURING LUBRICATING GREASES

MANUFACTURERS OF EQUIPMENT FOR APPLICATION OF LUBRICATING GREASES

HELP WANTED

Patents and Developments

High Temperature Lubricating Greases

There already have been discussed in this column the advantages claimed for the combination of certain salts of low molecular weight acids with the metal soaps ordinarily emp'oyed as thickeners for lubricating greases. The lower molecular weight salts are said to offset the normal tendency of some of the soaps of certain fatty acids to break down into lower molecular weight substances having little or no thickening power.

In its U. S. Patent 2,591,586, Standard Oil Development Co., proposes to employ, as the low molecular weight acid salt component, the reaction product obtained by reacting a metal'ic hydroxide with acro'ein or acrolein dimer (3, 4-dihydro-2H-pyran-2-carbox-aldehyde).

Such greases may be produced by mixing the desired amount of acrolein or its dimer with one or two parts of the lubricating oil. Ordinarily there will be added to the oil 5-10 weight per cent of acrolein or dimer. Then, there is added to the mixture with agitation a strong metallic hydroxide solution (such as NaOH), which generally is 2.5-5 weight per cent on the acrolein or dimer. A reaction takes p'ace as is evidenced by a temperature rise.

After the reaction subsides, the saturated fatty acid is added as we'l as additional caustic to completely saponify the fatty acid. The temperature is raised to 250°-275° F. to dehydrate the mixture, and the balance of the lubricating oil is added, and the temperature is raised to 475°-500° F. until all of the ingredients are in solution in the oil. Finally the mixture is cooled to solidify the grease.

Lithium, calcium, barium or strontium base greases may be made in like manner.

Brick Grease

A hard, firm grease of the block or brick type, compounded to afford a maximum of lubrication with minimum leakage under severe operating conditions is described in U. S. Patent 2,591,630 issued to Standard Oil Development Co. In the past, such greases were made hard by use of a re'atively high soap content. Also, there have been incorporated fillers such as sodium carbonate, potassium silicate, graphite, cotton fibers, wool waste, sulfur, sodium chloride and sodium bicarbonate.

In paper machinery, grease leakage in excess of 0.08-0.1 lb. per 100 hrs. per bearing cannot be tolerated, so that a hard grease must be used, but, at the same time, if the grease is made so hard that it will not leak appreciably, it is likely to have deficient lubricating properties. A consumption rate of 0.15-0.4 lb. per 100 hrs. appears to be an optimum leakage for adequate bearing protection.

According to this patent, adequate lubrication without excessive leakage may be secured by combining a relatively

very light lubricating oil component, one which evaporates fairly rapidly under the conditions of paper mill and similar operations, with a relatively very viscous oil. Tests are submitted with various oils to show that the best results are obtained using 3-6 parts of a mineral lubricating oil of 80-125 S.S.U. viscosity at 100° F. with 1-6 parts of a mineral oil of viscosity between 2000-5000 S.S.U. at 100° F., the oils being blended to give an overall viscosity at 100° F. of 125-500 S.S.U. At least 8%, and preferably about 11.5% of a soda base soap of C_{12}-C_{24} aliphatic fatty acids is most desirable.

Amide-Containing Greases

A new type of grease allegedly having none of the disadvantages of soda or calcium base greases is described in U. S. Patent 2,594,286 issued to Swan-Finch Oil Corp. It is thickened by a class of amide gelling agents having the generic formula:

$$RNHC(CH_2)_xCNHR_1$$

where R is an aliphatic hydrocarbon radical having a carbon chain with a length of C_5 to C_{18}, R_1 is an aliphatic hydrocarbon radical having a carbon chain of C_2 to C_{18}, and x equa's 1 to 8, and in which at least one of said CH_2 groups may be $C=CH_2$.

These greases are in the form of gels, and when a compound of the above class is present in the proportion of 6-18% of the grease, it forms a smooth, semi-solid mass at room temperature. The odor of these substances varies from ammoniacal for those similar to N-lauryl-N_1-n-butyl sebacamide, to sweet-spicy in the case of compounds containing long chains attached to the nitrogen atoms. Other examples of suitable thickeners of this type are N-lauryl-N_1-lauryl azelaamide, N-stearyl-N_1-stearyl itaconamide, N-lauryl-N_1-palmityl-malonamide, etc. They are readily prepared, for example by heating sebacic acid with stearyl amine and oleylamine (to produce N-stearyl-N_1 oleyl sebacamide).

The greases prepared with these thickeners are claimed to be bleed-resistant, rust inhibiting, oxidation-stable, reversible on heating, water repellent, and metal adherent due to their high polarity.

Inorganic Gel-Thickened Greases

A method of preparing inorganic gel-thickened greases which are resistant to attack by water is described in the Shell Development Co., patent 2,594,822. According to the patent, alcoholates of polyvalent metals are dispersed in a lubricating oil medium. For example, calcium ethylate in alcohol is dissolved in a hydrocarbon lubricating oil and hydrolyzed by slow addition of water with stirring. The mixture then is heated to 130°-140° C. for removal of alcohol, after which the calcium hydroxide and oil are milled to produce a smooth grease.

Besides calcium ethylate, one may use aluminum isopropylate, etc. Such gels are claimed to show an unexpected response to the presence of waterproofing agents such as 12-hydroxystearic acid, aluminum oleate, octadecyl amine, glyceryl monooleate, dimethyl chlorosilane, etc., which absorb

on the surface of the gel and protect the grease during contact with water. An amount of such waterproofing agent approximating 5% by weight of the gel is preferred.

Oxidation Inhibited Grease

It has been found that grease compositions containing some bis (5-methyl-2-hydroxy phenyl) sulfide have "outstanding" oxidation resistance properties. Data on Norma-Hoffman oxidation tests, according to Standard Oil Development Company's U. S. Patent 2,595,161, show that such inhibitors are about twice as good as alkyl cresols and about five times as good as alkyl phenols.

Phenolic type antioxidants are said to be generally unstable in presence of sunlight and form by-products which impart an undesirable darkening effect. Test results are submitted showing that bis-phenol sulfide greases remain unchanged after exposure to 60 days' sunlight, whereas similar greases containing alkyl phenols or cresols showed darkening within that period.

Greases Containing Metal Soap Complexes

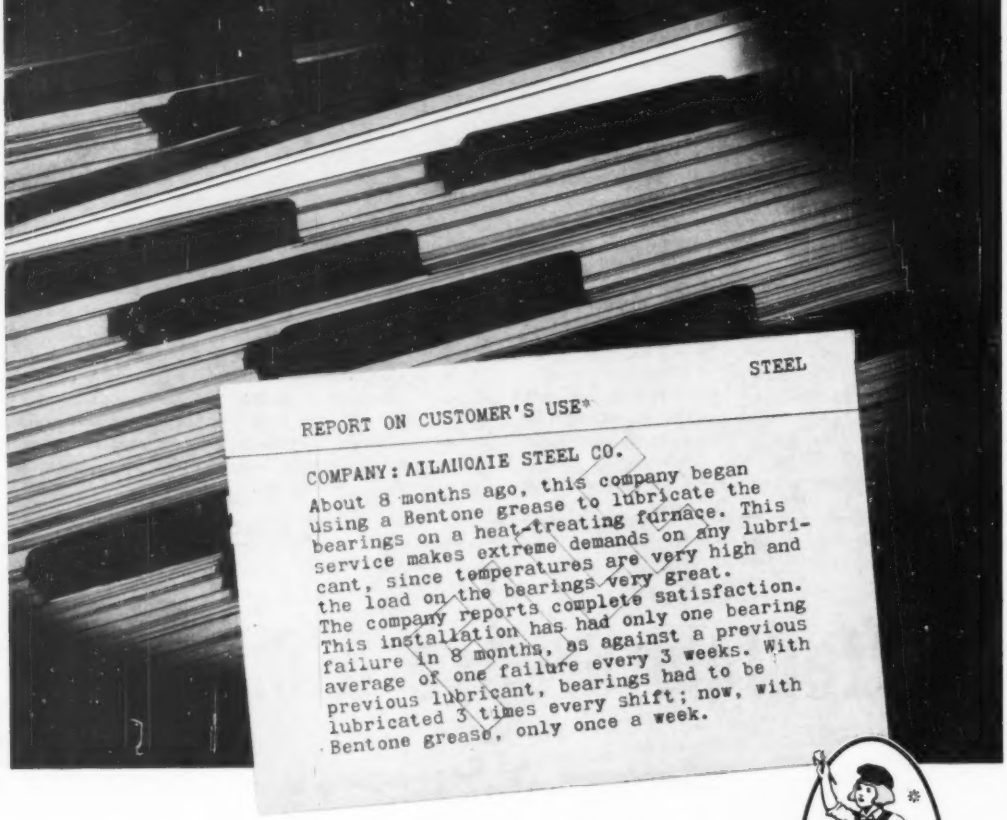
According to U. S. Patents 2,595,556-7 issued to Union Oil Co. of California, certain metal soap complexes, such as those prepared with urea, have unusual thickening effects on lubricating oils even at relatively low concentrations and are compatible with, and may be used to produce stable greases with low V. I. lubricating oils normally used in grease production, as well as with high V. I. oils which are generally considered unsuitable for preparing stable greases.

By "metal soap complex" is meant a product which is substantially neutral or free from readily titratable excess alkalinity, and in which the ratio of equivalents of combined metal to equivalents of combined saponified higher molecular weight organic acids is preferably between 1·2 to 1 and 2 to 1.

Metal soap complex thickened greases of this type are prepared by treating mixtures of normal soap and excess saponification reagent (basic metals or metal compounds), in presence or absence of mineral oil, together with a complexing agent (such as urea, ammonium carbonate, ammonium bicarbonate, ammonium carbamate, or other compound which will react with aqueous NaOH at below 300° F. to convert the NaOH into sodium carbonate and liberate ammonia). The chemistry involved apparently is not simple nor completely understood, but it is noted that during the complexing treatment with complexing agent, the quantity of readily titratable alkalinity is reduced in proportion to the amount of complexing agent employed. The resulting products, which may or may not be completely neutralized with complexing agent, are completely oil dispersible and have improved properties over the normal soap and when neutralized to within the preferred range with complexing agent (and possibly with a low molecular weight organic acid), all of the desirable characteristics for metal soap complexes are realized. Furthermore, it is observed that after treatment of soap-base mixtures with complexing agent, regardless of how much agent is used, the amount of combined metal present in the resulting complex is greater than that present in a normal soap.

EVERY INDUSTRY SAYS THE SAME THING...

"Bentone greases far superior to anything else we have used"



STEEL

REPORT ON CUSTOMER'S USE*

COMPANY: AILAIICAIE STEEL CO.

About 8 months ago, this company began using a Bentone grease to lubricate the bearings on a heat-treating furnace. This service makes extreme demands on any lubricant, since temperatures are very high and the load on the bearings very great. The company reports complete satisfaction. This installation has had only one bearing failure in 8 months, as against a previous average of one failure every 3 weeks. With previous lubricant, bearings had to be lubricated 3 times every shift; now, with Bentone grease, only once a week.

In industry after industry, greases prepared with "Dutch Boy" Bentone 34 are making extraordinary records under conditions of extreme pressures and extremes of temperature. Bentone greases "stay put" when no other lubricant will, and are superior in stability and water resistance. For information on greases prepared with

*Courtesy Warren Refining and Chemical Co.

Dutch Boy®

TRADE MARKS REGISTERED U. S. PATENT OFFICE

BENTONE ★ 34

a radically new, non-soap gelling agent

write to.....

NATIONAL LEAD COMPANY

BAROID SALES DIVISION

P. O. Box 1675 ★ Houston, Texas

The complexing agents can be considered to be ammonia derivatives of carbonic acid. They may be added in the form of an aqueous solution or as the dry compound. The following example illustrates the production of one type of grease:

A barium soap complex grease is prepared from the following ingredients:

	Kilograms
Prime tallow	7.0
Tallow fatty acids	21.0
Urea	1.5
Acetic acid (80%)	1.88
Barium hydrate ($Ba(OH)_2 \cdot 8H_2O$)	28.5
SAE 40 naphthenic lubricating oil	82.2

The prime tallow, tallow fatty acids, 14.0 kg. of the mineral oil and the barium hydrate are charged to a steam jacketed grease kettle of about 1 barrel capacity equipped with means for agitation and heated to about 235° F. with agitation. At this time the urea and an additional 14.0 kg. of the oil are added and the mixture agitated and heated to 300° F. for a period of about 1¼ hours. The mixture is cooled to 200° F. and about 0.5 kg. of water is added. The acetic acid is then added and the temperature raised to 250° F.-275° F. while continuing the agitation for about 1 hour. The remainder of the lubricating oil is added while cooling the grease to 200° F., after which 0.5 kg. of water is added to hydrate the grease and dehydration is subsequently effected by raising the temperature to 285° F. The finished grease contains about 34.1% metal soap complex having a ratio of equivalents of combined barium to equivalents of saponified higher molecular weight acids of about 1.75 to 1. The product is unctuous and has a slightly fibrous structure. The unworked ASTM penetration at 77° F. is 272.

Phthalocyanine Greases

Mention has been made here some time ago of news releases and reports dealing with phthalocyanine-thickened greases. A patent (2,597,018) recently issued on this subject to R. L. Merker and C. R. Singleterry, and further data on the subject are disclosed therein.

The patent points out that such greases are particularly useful for lubricating bearings at high temperatures, and over long periods of storage time. Ordinary soap thickeners are said to be oxidation catalysts and they also undergo undesirable phase changes at low temperatures.

The metal phathalocyanine compounds, used as the gelling agents in these greases, are claimed to be stable at amazingly high temperatures. Many of them can be sublimed without decomposition at temperatures of the order of 500° C. Furthermore, they are relatively unreactive and are compatible with most oils and additives. Not only can the metal-free phthalocyanine be employed, but also the metal compounds of zinc, nickel, aluminum and particularly copper. About 10-45% of the thickener is employed.

Oxidation tests are stated as showing that, in loaded tests at 160° C., a copper phthalocyanine grease lasted 450 hrs. compared to 150 hrs. for lithium stearate grease.

News Items

Influence of soap phase structure on physical properties of lithium greases—Evans et al (J. Appl. Chem. 5/52 p. 252).

Chemical causes of wear—in general lubrication (by the atmosphere), in engine and gear lubrication (by the lubricants), and in engine lubrication (by combustion products)—Broeze (Engineering 5/30/52 p. 693).

Abetco Distributors, 9371 Washington Blvd., Culver City, Calif., is marketing a portable shielded bearing lubricator and cleaning attachment which can be attached to any lubricating gun (Amer. Avia. 6/23/52 p. 41).

The Technical Committee . . .

(Continued from Page 17)

Offers have been received from the Fatty Acid Division of the Association of American Soap & Glycerine Producers, Inc., to provide one or more talks on that subject from the fatty acid manufacturers' viewpoint. The chairman of the symposium is Mr. T. E. DeVilliers, whose address is Cities Service Oil Company, Box 718, East Chicago, Indiana. Mr. DeVilliers will welcome any suggestions which will enable the session to be of increased value not only to the manufacturers of grease but also to the Associate Members of NLGI.

You can do it, too . . . with Pure Oil Industrial Lubricants

At one fell swoop, you can cut your inventory . . . cut your costs . . . cut your problems . . . with Pure Oil's complete line of industrial lubricants.

Many of these top-quality oils and greases, you see, are designed to do several *different* jobs instead of one specific job.

And to do each job *equally well.*

This enables you to do *all* your lubricating with *fewer* lubricants. In other words, you can

simplify and save . . . with

Pure Oil Industrial Lubricants

THE PURE OIL PURE COMPANY, U.S.A.

Be sure with Pure

If you would like to swing a sharp axe on *your* lubricating costs (and who wouldn't, things being what they are!) write: The Pure Oil Company, Industrial Sales, 35 E. Wacker Drive, Chicago 1, Illinois.

PEOPLE in the Industry

Dr. K. A. Smith Promoted At Sinclair Research

E. J. Martin, Vice-President and General Manager, Sinclair Research Laboratories, Inc., has announced the promotion of Dr. K. A. Smith to the post of Director of the Light Oils Division.

Upon graduation from the University of Wisconsin in 1943, with a Bachelor of Science degree in Chemical Engineering, Dr. Smith began his career with Sinclair in its research and development department. One of his first assignments was in the operation of pilot plants, where he did much work during the war on the research and development of new aviation gasolines. Dr. Smith was also connected with the process design division of the research and development department. In 1946, he again took up his scholastic work at the University of Wisconsin. In 1948, he was awarded his Ph.D. in Chemical Engineering, whereupon he returned to Sinclair research and development and was assigned to the light oils division.

Dr. Smith holds membership in several scientific organizations, two of which are the American Institute of Chemical Engineers and the Alpha Chi Sigma.

The new position which Dr. Smith assumed will cover the direction of research and development work on processes and products in light oils.

Leonard L. Robb Heads Sales to Car Factories

Leonard L. Robb has been named to head sales to car factories and other original equipment users of Alemite Lubrication equipment and Stewart-Warner instruments, F. A. Hiter, senior vice-president of Stewart-Warner Corporation, has announced.

A graduate of Harvard in 1925, Mr. Robb joined Stewart-Warner in 1928 as a stock record clerk. For eight years prior to his appointment as assistant to the president in 1950 he was production control manager of the division whose wholesale sales he now heads.

Geuder, Paeschke & Frey Names a New Vice-President

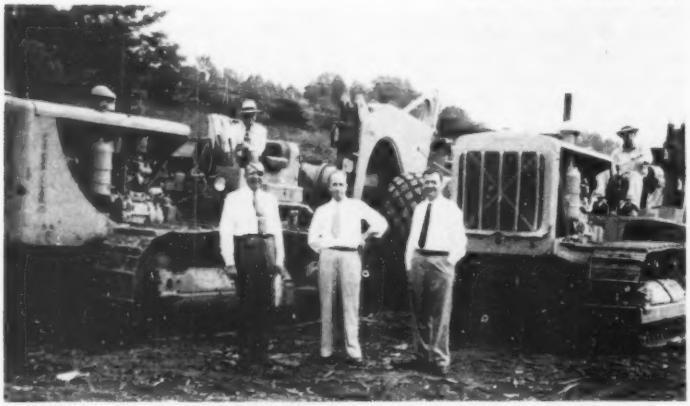
Frank T. Frey has been promoted to the position of executive vice-president of Geuder, Paeschke & Frey Co., Milwaukee, it was announced by August K. Paeschke, president of the firm. Mr. Frey, who was formerly vice-president in charge of purchasing, will now head both the purchasing and manufacturing divisions.

A grandson of Frank J. Frey, one of the original founders of Geuder, Paeschke & Frey Co., Mr. Frey joined the firm in 1939. Starting in the factory, he advanced through various manufacturing and administrative positions. He was treasurer of the company from 1946 to 1950, and had been in charge of purchasing operations from 1950 to the present time.

Mr. Frey is a graduate of Dartmouth College and of the Harvard School of Business Administration.

Industry NEWS

Construction Begins on Foote Mineral Company's New Lithium Plant at Sunbright, Virginia



SHOWN AT GROUND BREAKING ceremonies are Gordon H. Chambers, President; Sam Coleman, Gate City, Va., attorney; and E. G. Enck, Secretary.

On Wednesday, August 6, 1952, Foote Mineral Company completed the deed transactions for approximately 200 acres of land and broke ground for its new lithium plant at Sunbright, Virginia. Under the direction of Harry Barrentine, Blaw-Knox Construction Supt., about 60,000 cubic yards of earth will be moved to make ready for foundations for the first building, a warehouse and office structure. Of particular significance is the fact that Foote's plant will be the first of its kind in Scott County, Virginia, and will materially aid in the economic development of that area.

When completed the plant will employ over 100 chemical workers and be the focal point for a fair sized community development.

API Annual Meeting Will Feature Full Symposium On Evaporation Losses

A full-scale symposium on evaporation losses — a problem that has been bothersome and costly for the petroleum industry for years — will be one of the highlights of the 32nd annual meeting of the American Petroleum Institute at Chicago in November.

The prepared papers and discussions are expected to make the symposium the most extensive ever held on this subject. In addition, this will mark the first time that an evaporation losses symposium has ever been listed on an API annual meeting program.

Evaporation losses affect the petroleum industry virtually all the way from the well-head to the consumer's tanks. Their magnitude has never been fully measured, but they are known to be substantial despite the industry's best efforts to reduce them.

A special evaporation losses committee was appointed late last year by API President Frank M. Porter to prepare for the symposium. Since then, three subcommittees have spent more than six months in intensive work on the subject, and in preparing three papers. In each case, the papers will represent the most complete information available, as well as a composite round-up of the subcommittee's thinking.

The three papers will deal with theory, losses from cone roof tanks and losses from conservation-type tanks. After each is presented to the symposium, a prepared discussion will follow, according to Chairman J. H. McClintock of Esso Standard Oil Co., New York. The line-up for the papers is as follows:

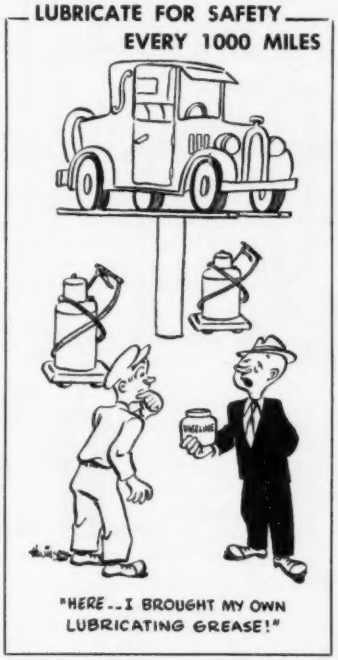
Paper on theory will be presented by C. C. Ashley, consultant, of Redwood City, California; discussion will be presented by O. W. Johnson of Standard Oil Company of California, San Francisco; subcommittee chairman was H. C. Packard of Shell Oil Co., New York.

Paper on losses from cone-roof tanks will be presented by I. L. Wissmiller of Chicago Bridge & Iron Co., Chicago; discussion will be presented by S. S. Smith of Shell Oil Co., New York; subcommittee chairman was L. S. Wrightsman of Humble Pipe Line Co., Houston.

Paper on losses from conservation-type tanks will be presented by H. L. O'Brien of Graver Tank and Manufacturing Co., East Chicago; discussion will be by A. B. Stevens, General Petroleum Corporation, Los Angeles; subcommittee chairman was E. L. Hoffman, Socony-Vacuum Oil Co., New York.

In addition to Messieurs McClintock, Packard, Wrightsman and Hoffman, other members of the general committee on evaporation losses are R. M. Bartlett, Gulf Oil Corporation, Pittsburgh, Pa.; W. H. Creel, Phillips Petroleum Co., Bartlesville, Okla.; J. H. Field, Sohio Petroleum Co., Oklahoma City; R. N. Giles, Standard Oil Company (Indiana), Chicago; J. G. Jordan, Shell Oil Co., New York; J. T. McCoy, Tidewater Associated Oil Co., New York; A. E. Miller, Sinclair Oil Co., New York; F. W. Miller, Esso Shipping Co., New York; T. C. Smith, General Petroleum Corporation, Los Angeles; and E. O. Mattocks, American Petroleum Institute, New York (Secretary).

The symposium will be held Monday afternoon, November 10, in the south ballroom of the Conrad Hilton Hotel. It will be sponsored by the API's Department of Technical Services.



OIIC Produces Action Film Entitled 'Crossroads, U. S. A.'

The story of a split-second decision which becomes the turning point in a young man's life is told dramatically in the 1952 motion picture produced by the Oil Industry Information Committee of the American Petroleum Institute. The setting is a suburban service station.

Entitled "Crossroads, U.S.A.," the new motion picture had its premiere at the 50th annual meeting of the National Petroleum Association in Atlantic City, N. J., September 11.

"Crossroads, U.S.A." is the latest in a series of motion pictures produced annually by the Oil Industry Information Committee. Following its premiere, it will be used extensively during the industry's observance of Oil Progress Week, October 12-18. It will be shown to millions of persons over the next several years.

Running time for the production, which is in black and white, is 25 minutes. Featured in it are such well-known Hollywood personalities as Elisabeth Risdon, Regis Toomey, Rhys Williams, Darryl Hickman, Ted De Corsia, James Bell, Frank Darien and Joseph McGuinn.

Not a documentary, "Crossroads, U.S.A.," has plot, action and suspense. The story it tells is a powerful close-up of Americana—the drama of enterprise and opportunity which have made this country the greatest in the world.

All of the action takes place in a little service station on a rain-swept night. In the midst of a group of people who have taken shelter from the storm is a boy on the verge of manhood—a boy who has grown up in the land of opportunity but is, nevertheless, embittered and disillusioned.

How his confusion is dispelled, and how his faith in himself is given root and substance are the ingredients which put a mighty wallop in this new motion picture.

This 1952 motion picture was directed by Jules Bricken at the studios of Columbia Pictures Corporation in Hollywood. It was supervised by Film Counselors, Inc., New York, and the Oil Industry Information Committee's motion picture subcommittee headed by P. C. Humphrey of the Texas Company, New York. The story was written especially for the

THE OUTDOOR GROUP ARRIVES AT THE 20th NLGI ANNUAL MEETING

Hotel Manager to Assistant — "Wonder if these late reservation people will like our air-conditioned park."

(Here is the Edgewater Beach Hotel, 5300 Block Sheridan Road in Chicago. Have you made your reservation there for October 27-29?)

Oil Industry Information Committee by Joseph Moncure March and Bruce Holmes.

Prints of "Crossroads, U.S.A." may be obtained through the committee's national office at 50 West 50th Street, New York 20, as follows: 16-millimeter, $42.50, plus shipping costs; 35-millimeter, $100.00, plus shipping costs.

Earlier productions, "Man on the Land," "24 Hours of Progress," and "The Last Ten Feet" still are being shown frequently throughout the country. "Man on the Land" and "24 Hours of Progress" both won citations from the Freedoms Foundation, Inc., for their contributions to a better understanding of America.

Precision Scientific Has New Closed Cup Tester

Precision Scientific Company has developed an electrically heated Closed Cup Tester for flash and fire point determinations of volatile, flammable liquids flashing below 175°F, in accordance with A.S.T.M. Method D-56. The instrument represents a notable improvement over the gas or alcohol-heated devices currently used.

Advantages of the Electric Flash Tester are: greater accuracy of temperature control, achieved by the "Handi-Hot Plate" heater; wide heater temperature range (from 100° to 700° F); and greater safety, since the only open flame present is that used to create the flash.

Essentially, the Electric Flash Tester is the same as the design specified by the American Society for Testing Materials, as well as by U. S. Government Master Specifications and the National Paint, Oil and Varnish Manufacturer's Association. The hot plate is provided with a metal collar which supports a water bath in which the standard oil cup is suspended. The oil cup cover is equipped with the specified flashing mechanism. The flash burner has a gas tip which may be provided with an oil wick if desired. Pressing the handle on the cover mechanism automatically opens the port and introduces the flash flame into the oil cup.

The Closed Cup Tester is precisely made of stainless steel and brass; the hot plate and support collar are steel with a heat-and corrosion-resistant baked enamel finish. A rubber-covered cord and plug are provided for connection to 115-volt, 50/60 cycle, A.C. Overall dimensions are 8¾ inches high and 4¾ inches diameter; net weight is three pounds. The Electric Flash Tester will soon be available in production lots.

Precision Scientific Company, 3737 W. Cortland St., Chicago 47, Ill.

Chek-Chart Puts Out Latest Tractor Guide

More than 4,000,000 tractors used by the growing force of power farmers will require a lot of careful lubrication and maintenance this year. To help provide proper service for tractors, The Chek-Chart Corporation, Chicago, recently announced publication of its Fourth Edition Tractor Guide which gives complete, factory-approved tractor lubrication recommendations.

This new edition of the Tractor Guide contains 78 pages of detailed lubrication diagrams covering every popular tractor model. Five pages of general lubrication instructions help each user of these guides give complete, satisfactory tractor lubrication service.

The Fourth Edition Tractor Guide also features diagrams of two tractors built in Canada: Cockshutt Models 30 and 40, and Massey-Harris "Pony" Model 11. These, along with all other charts in the new guide, have been thoroughly checked and revised by Chek-Chart's staff of tractor lubrication experts to comply with the manufacturers' latest recommendations.

Operators in or near farming communities find a tractor guide an invaluable help in increasing sales of lubrication service. Coupled with the latest editions of the Chek-Chart Farm Implement Guide and Truck Guide, the Fourth Edition Tractor Guide gives the most comprehensive data on farm equipment lubrication obtainable anywhere.

1953 IPE Requires Additional Exhibit Space

A new exhibit area, providing 35,000 square feet of additional space, is being prepared for use during the thirtieth anniversary International Petroleum Exposition to be held in Tulsa, May 14-23, 1953.

The area, adjacent to the present exposition grounds, is being graded and subdivided to accommodate a large number of exhibits. Including the new addition, the 1953 oil show will occupy nearly 25 acres.

Wm. B. Way, exposition general manager, explained that "exhibit facilities have been taxed to capacity, and even with the increased space we will have a difficult time taking care of all firms who wish to exhibit."

"A large percentage of present exhibitors have requested increased space," Mr. Way said, "and we're attempting to secure more additional space in order to take care of all legitimate space requests."

Within the new area, four 20-foot streets, three walkways, each 12 feet wide, and a 40-foot loading zone to facilitate handling the heavy equipment which will be brought in for display, have been included in the layout. They will be topped with asphalt after utility lines have been laid.

According to Mr. Way, the work on the new area should be completed by November 1.

Mr. Way also pointed out that the exposition plant is undergoing extensive

repairs and reconditioning. Roofs of all five exposition buildings have been waterproofed; joists and flooring are being inspected for rot and termites and much of it is being replaced; 1300 feet of water line is scheduled for replacement; 600 feet of new gas lines are being installed; and currently in progress is the installation of new expanded drainage facilities for the entire area. Mr. Way estimated the total repairs to run over $100,000.

The exposition housing bureau is now accepting applications for hotel or private home accommodations, which may be made by writing the bureau, 616 South Boston, Tulsa.

Stewart-Warner Buys Stock in London Company

Stewart-Warner Corporation has purchased substantial stock interest in Uni-Gun Lubricating Equipment, Ltd., of London, England, a company which presently manufactures an excellent but limited line of products similar to Stewart-Warner's Alemite lubrication equipment line, James S. Knowlson, board chairman and president, has announced.

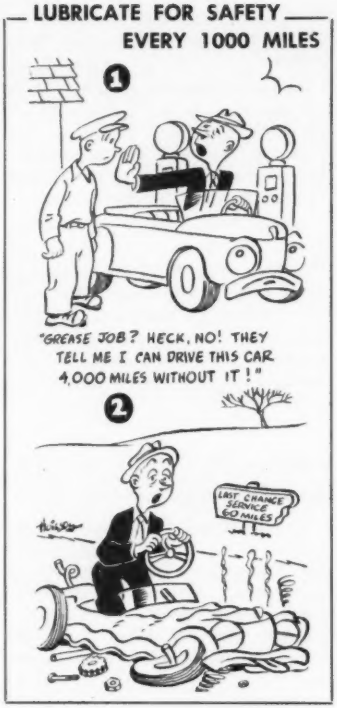
Along with its stock interest Stewart-Warner will have operating control of Uni-Gun Lubricating Equipment, Ltd., Mr. Knowlson said. He added that it is Stewart-Warner's intention to expand operations of the English company, for the purpose of furthering the distribution of Alemite and Uni-Gun products not only in Great Britain but in the world markets. Uni-Gun Lubricating Equipment, Ltd., will have access to all Alemite designs and developments.

Pacific Automotive Show Plans Near Completion

Plans for the 1953 Pacific Automotive Show, to be held in San Francisco at the Civic Auditorium from February 26 through March 1, 1953, are almost complete, according to J. Leonard Gibson, executive manager.

The 1953 show, sponsored by Automotive Wholesalers in the 11 western states, will have leading manufacturers of automotive parts, tools, accessories, equipment and allied lines participating.

Stressing the merchandising policy of manufacturer through wholesaler to retailer, all branches of the industry — garages, repair shops, service stations, and other automotive service operations — will be invited to attend.



Mailing to manufacturers, with applications for exhibit space, as well as invitations to sponsoring wholesalers, will be made in the near future.

The show will be staged with the cooperation of the Automotive Wholesalers and Booster Clubs in the 11 western states.

Fred Aurel, president of the 1953 show, has announced his show committee. Besides President Fred Aurel, American Gear and Motor Service, it comprises Lou Cresta, Cresta Brothers Auto Parts, Incorporated; Marvin Freeman, Chanslor and Lyon Company; Guido Zanone, Patterson Parts, Incorporated; and Ed. J. Butler, Joe W. Muser, Harry P. Sloan, members of Automotive Booster Club B-10, all of San Francisco.

Committee chairmen were also announced by President Aurel, as follows: W. B. Chick, McCulloch Auto Supply Company, Chairman Sponsoring Whole-

(Continued on Page 32)

Helpful information for YOU
. . . in these recently-published books!

The Physical Chemistry of Surface Films

by W. D. HARKINS
Andrew MacLeish Distinguished Service Professor Emeritus, University of Chicago

This important book covers all the fundamental pioneer work of the late W. D. Harkins on the mechanism of liquid/liquid films and interfaces, surface tension, emulsification, energetics of surfaces, films on liquid and solid subphases, and properties of long-chain electrolytes. Also included is an introductory study of the electric layer. Though some of the material has appeared in earlier publications, this volume serves as an invaluable guide to the many advances in emulsion technology — including emulsion polymerization — on which the author was working at the time of his death. All lubrication chemists, physicists — indeed, any scientist whose work involves an understanding of films, foams, or any type of heterogeneous system — will find this basic treatise of immense value.

1952, 425 pages, $10.00

Performance of Lubricating Oils

by H. H. ZUIDEMA
Shell Oil Company Research Laboratory, Wood River, Illinois

Amply supplied with helpful charts, tables and illustrations, this new book summarizes and evaluates the wealth of data on the performance characteristics of lubricating oils under various conditions. Here, you'll find discussions not only of general lubrication requirements, but **entire chapters** devoted to the lubrication process, flow characteristics, sludge and lacquer deposition, emulsification and foaming, and other important topics. In addition, a special chapter points out the effects of each step in the manufacturing process upon the performance characteristics of the final product.

American Chemical Society Monograph, 1952, 250 pages, $5.00

Physical Chemistry of Lubricating Oils

by A. BONDI
Shell Development Company, Emeryville, California

This volume offers you the latest theories on lubricating oils, and the physical and chemical principles underlying their action. Many inaccessible or widely scattered data and simple methods for the estimation of unknown properties from few given data will prove most valuable to engineers, physical chemists and all technical men in the lubrication field. Such properties as viscosity, pour point, oiliness, flow characteristics, foaming, etc. are discussed in great detail and attention is given to additives of all types. Synthetic lubricants and reaction kinetics are also fully treated.

1951, 450 pages, $10.00

Motor Oils and Engine Lubrication

by CARL W. GEORGI
Technical Director, Research Laboratories, Quaker State Oil Refining Corp.

The practical problems of engine usage, maintenance and lubrication, as well as causes and remedies affecting operating troubles, are described in this comprehensive book. It is the first of its kind to assemble for ready reference detailed information on the properties and service behavior of motor oils. Particular emphasis is laid upon viscosity index and its importance in all phases of motor lubrication. Detailed specifications covering various types of engine tests are included, together with properties of lubricants and all types of performance ratings.

1950, 515 pages, $9.50

USE THIS HANDY COUPON TO ORDER

THE INSTITUTE SPOKESMAN
4638 J. C. Nichols Parkway
Kansas City 2, Missouri

Please send me the books checked below:

- ☐ The Physical Chemistry of Surface Films $10.00
- ☐ Performance of Lubricating Oils 5.00
- ☐ Physical Chemistry of Lubricating Oils 10.00
- ☐ Motor Oils and Engine Lubrication 9.50

Name .....

Address .....

City ..... Zone ..... State .....

(Continued from Page 30)

salers' Committee; Guido Zanone, Patterson Parts, Incorporated, Chairman Credentials Committee; Robert E. McGill, Manufacturer's Representative, Chairman Floor Committee; Ed. J. Butler, Manufacturer's Representative, Chairman Booster Activities. The San Francisco Convention and Tourist Bureau will be in charge of housing for the 1953 show.

Pre-show features planned include regional meetings of both the National Standard Parts Association and the Motor Equipment Wholesalers Association. These meetings are scheduled for February 25, the day before the show opens.

The traditional kick-off banquet, sponsored by Automotive Boosters, will be held the evening of February 25 at the Fairmont Hotel.

Working Techniques Change Chemical Science, Technology

Three altered working techniques have transformed chemical science and technology, states an editorial in Industrial and Engineering Chemistry (April, 1952). They are team-type research, better methods of recording and locating information, and more efficient utilization of technical manpower. Final thought in editorial is that present period of history may be the start of the Technological Reformation.

White Company Is Agent For Witco Naphthenate

The Kenneth H. White Company of Detroit has been appointed agent for Witco Naphthenate, Tallate and Octoate Driers in the Detroit area by the Witco Chemical Company.

The Kenneth H. White Company was formed seven years ago and has since became a leading supplier of chemicals to the paint and allied industries.

Mr. White, the founder, graduated from Pennsylvania State College and worked with General Motors and White Star Refining as a chemist before going into industrial sales and eventually forming his own company.

New High Temperature Lubricant Developed

A joint Navy-industry program during the past five years has resulted in the development of new high temperature lubricants which promise to add greater efficiency to the operation of electric motors.

The new lubricants will allow operation of electric motors at higher temperatures. At the same time, they will prolong the intervals between lubrications.

By using the new high-temperature lubricants which are now commercially available, electric motors can be operated continuously at 150 degrees Centigrade (300° F) and require relubrication at intervals of between 500 and 1000 hours, the study indicates.

These intervals can be much longer if the motors are operated below that temperature for over 50 per cent of the time. Still longer intervals between lubrication will be possible when the motor design changes indicated by the study have been made. Previous operating temperatures on a continuous basis were limited to about 80° Centigrade (175° F).

Research facilities of the Naval Research Laboratory of the Office of Naval Research were coupled with those of leading manufacturers of electric motors, ball bearings, and lubricants in the program, which was organized and actively supported by the Electrical Division of the Navy's Bureau of Ships, under the leadership of Captain R. E. Cronin and Henry P. Walker. Dr. W. A. Zisman, of NRL, served as the coordinator for the program.

The cooperative study was prompted by the development of silicone-glass insulation for electric motors and other rotating electrical equipment. The high-temperature properties of this material offer distinct advantages over conventional insulating materials and permit substantial increases in power output without increase in physical dimensions.

The development of such equipment, however, both for the Armed Forces and for industrial applications, was retarded by the lack of information on the operation of anti-friction bearings and greases at the elevated temperatures—150° C. and higher—which result. So the Navy-Industry Committee was formed to solve the lubrication problem

(Continued on Page 33)

(Continued from Page 32)

involved and the Lubrication Branch of NRL was brought into the program to participate in the planning and to investigate the various basic problems uncovered.

Nine newly developed greases—all of which are now commercially available—were investigated and tested jointly by the cooperating members of the committee. These included a mineral oil gelled with a strontium soap, two mineral oils gelled with sodium soaps, a mineral oil and diester blend gelled with lithium soap and four silicone greases, one of which was gelled with carbon black and the others with lithium soaps. Only the silicone-lithium soap greases originated by NRL were useful at 150° C. for over 500 to 1000 hours of operation without regreasing. In occasional tests with these greases good performance for as much as 6000 hours was observed, showing the future possibilities when the high temperature properties of the new greases and bearings are better understood.

Lowering the operating temperature to 125° C. resulted in a large increase in the life of all the greases tested, the silicone-soap greases having a clear advantage over all the others. However, several non-silicone greases gave dependable operation at 125° C. for 1000 to 2000 hours without regreasing. For operation at 100° C., the three soap-gelled silicone greases and three of the non-silicone greases gave 10,000 to 15,000 hours of satisfactory operation without relubrication.

A military specification incorporating the findings of this cooperative program has been issued by the Bureau of Ships. Another outcome of the study, however, has been the indication of necessary changes in motor manufacture to make best use of the new greases. For maximum utilization of Class H insulation in electric motors, the study indicated that the lubricant system should be redesigned so that more of the fluid bled from the grease will migrate into the bearing. Seals or shields to prevent loss of grease from the bearing, a larger reserve of grease within the bearing proper, ball cages of selected non-ferrous metals, and the use of bearing steels stable at higher temperatures—all these factors should be considered in future motor designs.

FUTURE MEETINGS of The Industry

SEPTEMBER, 1952

23-24 American Petroleum Institute (Executive Committee of the Board of Directors), Greenbrier, White Sulphur Springs, W. Va.

25-26 Mid-Continent Oil & Gas Assn. (Louisiana-Arkansas Div. annual meeting). The Roosevelt, New Orleans, La.

25-27 Independent Oil Compounders Association (5th annual meeting), Edgewater Beach Hotel, Chicago, Ill.

OCTOBER, 1952

1-4 Socy. of Automotive Engineers (national aeronautic meeting, aircraft engineering display, and production forum), Hotel Statler, Los Angeles, Calif.

6-8 National Assn. of Oil Equipment Jobbers (2nd annual meeting), The Neil House, Columbus, Ohio.

8-9 American Socy. of Lubrication Engineers (First National Symposium on Fundamentals and Friction of Lubrication), Hotel Sherman, Chicago, Ill.

9-10 California Natural Gasoline Assn. (27th annual fall meeting), The Ambassador, Los Angeles, Calif.

12-18 Oil Progress Week.

13-15 American Petroleum Credit Assn., LaSalle Hotel, Chicago, Ill.

13-15 Texas Mid-Continent Oil & Gas Assn. (33rd annual meeting), Hotel Texas, Fort Worth, Texas

19 Natural Gasoline Assn. of America (southern regional meeting). The Blackstone, Tyler, Tex.

20-21 Independent Petroleum Assn. of America (annual meeting), Mayo Hotel, Tulsa, Okla.

20-22 American Oil Chemists' Socy. (fall meeting), Netherlands Plaza Hotel, Cincinnati, Ohio.

20-24 National Safety Council (40th national safety congress and exposition), Conrad Hilton Hotel, Chicago, Ill.

21-22 South Dakota Independent Oil Men's Assn., Alex Johnson Hotel, Rapid City, S. D.

22-24 Socy. of Automotive Engineers (national transportation meeting), Hotel William Penn, Pittsburgh, Pa.

27-29 National Lubricating Grease Institute (20th annual meeting), Edgewater Beach Hotel, Chicago, Ill.

FUTURE MEETINGS of The Industry

29 Oil Trades Assn. of New York, Inc., Waldorf-Astoria, New York, N. Y.

30 American Socy. for Testing Materials (St. Louis District), St. Louis, Mo.

30 Rocky Mountain Oil and Gas to Assn. (annual meeting), Cosmo-Nov. 1 politan Hotel, Denever, Colo.

NOVEMBER, 1952

4-5 Nebraska Petroleum Marketers, Inc. (annual convention), Hotel Paxton, Omaha, Neb.

6-7 Socy. of Automotive Engineers (national fuels and lubricants meeting), Mayo Hotel, Tulsa, Okla.

8-13 Oil Industry Information Committee, Conrad Hilton Hotel, Chicago, Ill.

10-13 American Petroleum Institute (32nd annual meeting), Conrad Hilton Hotel and Palmer House, Chicago, Ill.

11-12 American Petroleum Institute (Board of Directors meeting), Conrad Hilton Hotel, Chicago, Ill.

13 American Petroleum Institute (Executive Committee meeting), Conrad Hilton Hotel, Chicago, Ill.

17-18 Oil Industry TBA Group (annual meeting), The Park Plaza and Chase Hotels, St. Louis, Mo.

Week American Socy. for Testing Ma-of terials (Southern California Dis-Nov. 17 trict), Los Angeles, Calif.

19 American Standards Association (34th annual meeting), Waldorf-Astoria, New York, N. Y.

25 American Socy. for Testing Materials (E-11 on Quality Control of Materials), Philadelphia, Pa.

25 American Socy. for Testing Materials (Northern California District), San Francisco, Calif.

30 American Socy. of Mechanical to Engineers, Statler Hotel, New Dec. 5 York, N. Y.

DECEMBER, 1952

1-6 20th National Exposition of Power & Mechanical Engineering, Grand Central Palace, New York, N. Y.

7-10 American Inst. of Chemical Engineers (annual meeting), Hotels Cleveland and Carter, Cleveland, Ohio.

8-9 Chemical Specialties Mfrs. Assn. (39th annual meeting), Hotel New Yorker, New York, N. Y.

26-31 American Assn. for the Advancement of Science, Jefferson Hotel, St. Louis, Mo.

JANUARY, 1953

12-16 Socy. of Automotive Engineers (annual meeting and engineering display), Sheraton-Cadillac Hotel, Detroit, Mich.

FEBRUARY, 1953

3-5 American Socy. for Testing Materials (A-1 on Steel), Birmingham, Ala.

5-7 Missouri Petroleum Assn. (annual convention), Hotel President, Kansas City, Mo.

13 American Socy. for Testing Materials (Philadelphia District — National Officer's Night), Philadelphia, Pa.

18-19 Iowa Independent Oil Jobbers Assn. (annual convention), The Savery, Des Moines, Ia.

MARCH, 1953

2-6 American Socy. for Testing Materials (spring meeting), Hotel Statler, Detroit, Mich.

4-6 American Petroleum Institute (Division of Production, Southwestern district), The Blackstone, Ft. Worth, Tex.

8-11 American Inst. of Chemical Engineers, The Buena Vista, Biloxi, Miss.

16-20 National Assn. of Corrosion Engineers (1953 conference and exhibition), Hotel Sherman, Chicago, Ill.

25-27 Socy. of Automotive Engineers (national production meeting), Hotel Statler, Cleveland, Ohio.

FUTURE MEETINGS of The Industry

APRIL, 1953

15-17 National Petroleum Association (semi-annual meeting), Hotel Cleveland, Cleveland, Ohio.

20-22 American Petroleum Institute (Division of Transportation, products pipeline conference), Hotel Muehlebach, Kansas City, Mo.

26-29 American Inst. of Chemical Engineers (joint meeting with Chemical Institute of Canada), Royal York Hotel, Toronto, Canada.

MAY, 1953

4-6 Liquified Petroleum Gas. Assn. (annual convention & trade show), Conrad Hilton Hotel, Chicago, Ill.

11-15 National Fire Protection Assn. (annual meeting), Edgewater Beach Hotel, Chicago, Ill.

14-23 International Petroleum Exposition, Tulsa, Okla.

JUNE, 1953

2-3 American Petroleum Institute (Division of Production, Pacific Coast District spring meeting), Hotel Statler, Los Angeles, Calif.

29 to July 3 American Socy. for Testing Materials (annual meeting), Chalfonte-Haddon Hall, Atlantic City, N. J.

SEPTEMBER, 1953

13-16 American Inst. of Chemical Engineers, Fairmont and Mark Hopkins Hotels, San Francisco, Calif.

16-18 National Petroleum Assn. (51st annual meeting), The Traymore, Atlantic City, N. J.

OCTOBER, 1953

19-23 National Safety Congress, Conrad Hilton, Congress, Morrison, Sheraton, Chicago, Ill.

NOVEMBER, 1953

9-12 American Petroleum Institute (33rd annual meeting), Conrad Hilton Hotel and Palmer House, Chicago, Ill.

DECEMBER, 1953

13-16 American Inst. of Chemical Engineers (annual meeting), Hotel Jefferson, St. Louis, Mo.

ELIMINATE RANCIDITY WORRIES!

Peroxide Value* Tests Prove SUPERIOR OXIDATION RESISTANCE of EMERSOL STEARIC ACIDS

Keep YOUR Products Fresh and Appealing with Emersol Stearic and Palmitic Acids!

Don't take chances on the sales appeal of your products! Buy the added assurance of freedom from product rancidity with Emersol Stearic and Palmitic Acids.

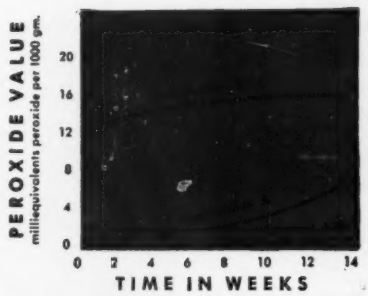
Peroxide value test results during aging illustrate the *superior oxidation resistance* of the Emersol Stearic Acids. Because you get this *extra* stability at no extra cost, you can't pass up the opportunity to be sure that your products have *maximum* stability and freedom from rancidity.

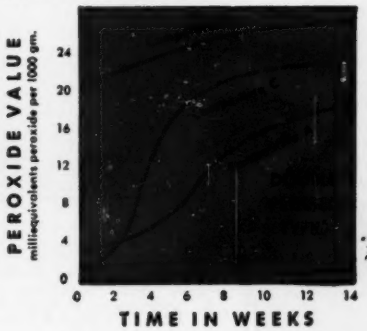
Next time, and everytime, buy Emersol Stearic and Palmitic Acids!

**Peroxide Value indicates the quantity of peroxides which are present in fatty products as the result of oxidation reactions. Therefore, lower peroxide values indicate greater resistance to oxidation.*

PEROXIDE VALUE DATA

Stored at room temperature—Flake form





Emery

Fatty Acids & Derivatives
Plastolein Plasticizers
Twitchell Oils, Emulsifiers

Emery Industries, Inc., Carew Tower, Cincinnati 2, Ohio

EXPORT: 5035 RCA Bldg., New York 20, N.Y.

Branch Offices
3002 Woolworth Bldg., New York 7, N. Y.
401 N. Broad St., Philadelphia 8, Pa.
187 Perry St., Lowell, Mass.
221 N. LaSalle St., Chicago 1, Ill.
420 Market St., San Francisco 11, Calif.

Represe[nta]tives
Schibley &
33 Public
Clevelan[d]
Ecclestone Ch[em]
2673 Gwain,
Detroit 7, Mi[ch]
Warehouse st[ocks]
Buffalo, Baltimore [and] [other] cities

A **WITCO** *-made* **stearate** *to fit your manufacturing requirements —economical, too*

Witco Research has developed a wide range of Stearates especially for grease manufacture. The gelling properties range from extremely high to very moderate. This permits our Technical Service Department to work with you in determining the exact Stearate to fulfill your requirements at the lowest possible cost.

Two plants, strategically located at Brooklyn and Chicago, insure prompt delivery.

WITCO-made stearates have been noted for 25 years for their high quality. And Witco's constant research sees to it that this quality will not only be maintained, but, if possible, improved.

Call on WITCO today.

WITCO products for the grease industry

ALUMINUM STEARATE #22
ALUMINUM STEARATE #23
ALUMINUM STEARATE #22-C
ALUMINUM STEARATE #22-G
ALUMINUM STEARATE #22-H
ALUMINUM STEARATE #22-K
LITHIUM STEARATE

WITCO
Chemical Company

295 Madison Ave., N. Y. 17, N. Y.
Los Angeles • Boston • Chicago • Houston
Cleveland • San Francisco • Akron
London and Manchester, England

N. L. G. I. Associate & Technical Members....

Supporting Your Organization These Suppliers of Your Industry Hold Membership in the N.L.G.I.

SUPPLIERS OF MATERIALS FOR MANUFACTURING LUBRICATING GREASES

American Cyanamid Company
30 Rockefeller Plaza
New York City 20, New York
Representative—E. A. Wieland

Archer-Daniels-Midland Company
Chemical Products Division
2191 West 110th Street
Cleveland 2, Ohio
Representative—F. C. Haas

Armour & Co., Chemical Division
1355 West 31st St.
Chicago 8, Illinois
Representative—Dale V. Stingley

Darling & Company
4201 South Ashland Avenue
Chicago 9, Illinois
Representative—George W. Trainor

E. I. du Pont de Nemours & Company
Wilmington, Delaware
Representative—J. R. Sabina

Emery Industries, Inc.
4300 Carew Tower
Cincinnati 2, Ohio
Representative—R. F. Brown

Enjay Company, Inc.
15 West 51st Street
New York 19, New York
Representative—Sidney W. Fay

Foote Mineral Company
18 W. Chelten Avenue
Philadelphia 44, Pennsylvania
Representative—H. C. Meyer, Jr.

General Mills, Inc.
Chemical Division
400 Second Avenue South
Minneapolis 1, Minnesota
Representative—Sewall D. Andrews

A. Gross & Company
295 Madison Avenue
New York 17, New York
Representative—Eugene Adams

W. C. Hardesty Co., Inc.
41 East 42nd Street
New York City, New York
Representative—W. G. McLeod

Harshaw Chemical Company
1945 East 97th Street
Cleveland 6, Ohio
Representative—G. G. Unketer

Leffingwell Chemical Company
P. O. Box 191
Whittier, California
Representative—D. E. Murphy

Lubrizol Corporation
Euclid Station
Box 3057
Cleveland 17, Ohio
Representative—J. H. Baird

Mallinckrodt Chemical Works
New York 8, New York
St. Louis 7, Missouri
Representative—C. E. Cosby

N. I. Malmstrom & Company
147 Lombardy Street
Brooklyn 22, New York
Representative—Ivar Wm. Malmstrom

Marcus Ruth Jerome Company
327 South LaSalle Street
Chicago, Illinois
Representative—Harry Bernstein

Metalloy Corporation
2560 Rand Tower
Minneapolis, Minnesota
Representative—Mr. Walter M. Fenton

Metasap Chemical Corporation
Harrison, New Jersey
Representative—O. E. Lohrke

Monsanto Chemical Company
1700 Second Street
St. Louis 4, Missouri
Representative—J. W. Newcombe

National Lead Company
105 York Street
Brooklyn 1, New York
Representative—Alexander Stewart

National Rosin Oil Products, Inc.
R.K.O. Bldg., Rockefeller Center
New York City, New York
Representative—Richard Bender

M. W. Parsons—Plymouth, Inc.
59 Beekman Street
New York City 38, New York
Representative—H. Bye

Synthetic Products Company
1636 Wayside Rd.
Cleveland 12, Ohio
Representative—G. B. Curtiss

Swift & Company Industrial Oil Division
165th & Indianapolis Blvd.
Hammond, Indiana
Representative—F. H. Beneker

Vegetable Oil Products Co., Inc.
Vopcolene Division
5568 East 61st Street
Los Angeles 22, California
Representative—Mr. C. F. Williams

Warwick Chemical Company
Division of the Sun Chemical Corporation
10-10 44th Avenue
Long Island City 1, New York
Representative—Dr. J. J. Whitfield

Witco Chemical Co.
75 E. Wacker Drive
Chicago, Illinois
Representative—B. W. Lewis

CONTAINER AND CLOSURE MANUFACTURERS

Central Can Company, Inc.
2415 West 19th Street
Chicago, Illinois
Representative—Henry Frazin

Continental Can Company, Inc.
1103 Waldheim Building
Kansas City 6, Missouri
Representative—T. A. Graham

Gauder, Paeschke & Frey Co.
324 North Fifteenth Street
Milwaukee 3, Wisconsin
Representative—Willard J. Flint

Inland Steel Container Company
6532 South Menard Avenue
Chicago 38, Illinois
Representative—G. D. Zuck

Jones & Laughlin Steel Corporation
Container Division
405 Lexington Avenue
New York 17, New York
Representative—Jerry Lyons

National Steel Container Corporation
6700 South LeClaire Avenue
Chicago 38, Illinois
Representative—Henry Rudy

Ohio Corrugating Co.
917 Roanoke Ave. So. E.
Warren, Ohio
Representative—L. F. McKay

Rheem Manufacturing Company
570 Lexington Avenue
New York, New York
Representative—G. Wesley Gates

Rieke Metal Products Corporation
Auburn, Indiana
Representative—Ralph S. Pearson

United States Steel Products Co.
30 Rockefeller Plaza
New York City 20, New York
Representative—Wm. I. Hanrahan

Vulcan Stamping & Manufacturing Co.
3000 Madison Street
Bellwood, Illinois
Representative—H. B. Scharbach

MANUFACTURERS OF EQUIPMENT FOR APPLICATION OF LUBRICATING GREASES

The Aro Equipment Corporation
Byron, Ohio
Representative—R. W. Morrison

Bellcrank, Inc.
Disney near Marburg
Cincinnati 9, Ohio
Representative—R. P. Field

Gray Company, Inc.
60 11th Avenue Northeast
Minneapolis 13, Minnesota
Representative—L. L. Gray

Lincoln Engineering Company
5701 Natural Bridge Avenue
St. Louis 20, Missouri
Representative—G. A. Hubbard

Stewart-Warner Corp.
1826-1852 Diversey Parkway
Chicago, Illinois
Representative—Walter Duncan

U. S. Air Compressor Company
5300 Harvard
Cleveland, Ohio
Representative—C. A. Bening

SUPPLIERS OF EQUIPMENT FOR MANUFACTURING LUBRICATING GREASES

Buffalo Equipment Division of Blaw-Knox Company
1543 Fillmore Avenue
Buffalo 15, New York
Representative—Edward V. Hegg

Chemicolloid Laboratories, Inc.
30 Church Street
New York, New York
Representative—David F. O'Keefe

The Girdler Corporation
Louisville 1, Kentucky
Representative—John E. Slaughter, Jr.

Morehouse Industries
707 Henry Grady Bldg.
Atlanta 3, Georgia
Representative—George E. Missbach

Stratford Engineering Corporation
1414 Dierks Building
Kansas City, Missouri
Representative—J. W. Sylvester

REFINERS

Farmers Union Central Exchange, Incorporated
P. O. Box G
St. Paul 1, Minnesota
Representative—H. F. Wagner

Freedom Valvoline Oil Co.
Box G
Freedom, Pennsylvania
Representative—D. A. Smith

Mid-Continent Petroleum Corporation
Tulsa, Oklahoma
Representative—T. E. Fitzgerald

TECHNICAL AND RESEARCH ORGANIZATIONS

Midwest Research Institute
4049 Pennsylvania
Kansas City 2, Missouri
Representative—Dr. M. H. Thornton

Petroleum Educational Institute
9020 Melrose Avenue
Los Angeles 46, California
Representative—G. A. Zamboni

Phoenix Chemical Laboratory, Inc.
3953 W. Shakespeare Avenue
Chicago 47, Illinois
Representative—Mrs. G. A. Krawetz

Sociedade Nacional de Petroleos
Rua D. Pedro V, no. 80
Lisbon, Portugal
Representative—Manuel Corda Boullosa

You Can MODERNIZE–ECONOMIZE

and Improve Your Product

with a

STRATCO
Reg. U. S. Pat. Off.

Engineered and Equipped Grease Plant

Combinations of Stratco High Dispersion Contactors, Process Kettles and Oil Circulation Heaters provide speed, versatility and economy in the manufacture of a wide variety of greases.

A minimum of equipment is required. Reduced laboratory control and manpower needs result. Fat consumption is less and more uniform greases are produced.

These advantages have been proved in actual plant operation and can be demonstrated to interested parties. Inquiries invited.

STRATFORD ENGINEERING

CORPORATION

Petroleum Refining Engineers

DIERKS BLDG. KANSAS CITY 6, MO.